



KAPLAN MEDICAL

Ans

ANemia

KAPLAN MEDICAL

ANEMIA

KAPLAN MEDICAL

ANemia



KAPLAN MEDICAL

ANEMIA

SYMPTOMS

ANEMIA

SYMPTOMS

Hg/
HCT

14

ANEMIA

SYMPTOMS

Hg/
HCT

Is

ANEMIA

Symptoms

ANEMIA

SYMPTOMS

HCT

70%

KAPLAN MEDICAL

ANEMIA

SYMPTOMS

HCT

30-35 %

ANEMIA

Symptoms

HCT

30-35 %

25-30 Tired, fatigued

ANEMIA

Symptoms

HCT

30-35 %

25-30 Tired + Fatigue

20-25 Dyspnea

ANEMIA

Symptoms

HCT

730-35 ♂

25-30 Tired/Fatigue

20-25 Dyspnea

ANEMIA

SYMPTOMS

HCT

730-35 ♂

25-30 Tired + Fatigue

20-25 Dyspnea

<7

ANEMIA

Symptoms

HCT

730-35 ♂

25-30 Tired + Fatigue

20-25 Dyspnea

<20 Confused

Diagnosis

Angina

Symptoms

>35

Tired + Fatigue
Dyspnea
Use of

KAPLAN MEDICAL

Anemia

Symptoms

HCT

730-35 ρ

25-30 Tired + fatigue

20-25 Dyspnea

<20 Confused

Die \Rightarrow T

ANEMIA

SYMPTOMS

-35 %

30 Tired + Fatigue

Dyspnea

Head

ANEMIA

KAPLAN MEDICAL

ANEMIA

Symptoms

HCT

30-35 %

25-30 Tired/Fatigue

20-25 Dyspnea

15-20 Confused

Die \Rightarrow Ischemia

ANEMIA

SYMPTOMS

HCT

730-35 ϕ

25-30 Tired, fatigued

20-25 Dyspnea

10-15 Severe d

Ischemia

ANEMIA

Symptoms

HCT

730-35 ♂

25-30 Tired/Fatigue

20-25 Disturbed
Confused

Die Ischemia

ANEMIA

Symptoms

HCT

730-35 ♂

25-30 Tired/Fatigue

20-25 Dyspnea

<20 Confused

Die > Ischemia

ANEMIA

SYMPTOMS

HCT

730-35 ♂

25-30 Tired + fatigued

20-25 Dyspnea

<20 - Confused

Die → Ischemia

ANEMIA

SYMPTOMS

HCT

30-35 %

25-30 Tired + fatigued

20-25 Dyspnea

<20 - Confused

Die > Ischemia

ANEMIA

Symptoms

S/S
3Q Tired/Fatigue
Dyspnea
Confuse &
Head

KAPLAN MEDICAL

ANEMIA

SYMPTOMS

-35 g

30 Tired + fatigued

or Dyspnea

or Pale

ANEMIA

ANEMIA

SYMPTOMS

35%

30% Tired + Fatigue

Disturbed

use of

PHO

KAPLAN MEDICAL

ANEMIA

SYMPTOMS

HCT

730-35 ♂

25-30 Tired + fatigued

20-25 Dyspnea

<20 Confused

Die \Rightarrow Ischemia

Anemia

Symptoms

HCT

730-35 p

25-30 Tired/Fatigue = MCY

20-25 Dyspnea

10-15 Confused

Die > Ischemia

ANEMIA

Symptoms

HCT

730-1

25-30

20-

<20

fatigue
weak

MCV

high

low

KAPLAN MEDICAL

ANEMIA

Symptoms

→ High
B12/Folate

Tired + fatigued = MC

EMIO

→ Low

ANEMIA

Symptoms

CT

30-35 \downarrow

25-30 Tired + fatigued

20-25 Dyspnea

20 - Confused

Die \Rightarrow Ischemia

\nearrow High
B12 / Folate
Liver / Alcohol

MCV \Rightarrow Normal

\nearrow Low

Anemia

Symptoms

SS ↓
BQ Tired + Fatigue
↓ Dizziness
↓ Pale
↓

→ High
B12 / Folate
Liver (Alcohol)

MCV → Normal

→ Low

ANEMIA

Symptoms

↓
Tired + Fatigue
↓
Dyspnea

→ High
B12 / Folate
(Liver, Alcohol)

MCV →

→ Low

Anemia

Symptoms

Hyper
Sess

→ High
B12 / Folate
Liver (Alcohol)

CT

20-35

3-30 Tired
Dist

MCV → Normal

He → Ischemia

→ Low

Anemia

Symptoms

Hyper
Splenomegaly

→ High
B12 / Folate
(Liver, Alcohol)

Hb

73

25-

20-

Red Fatigue

Weak

MCV → Normal

ANEMIA

Symptoms

Hypersegmented

→ High
B12 / Folate
(Liver, Alcohol)

HCT

730-35

25-30 Tired + Fatigue

25-30 Dyspnea

25-30

MCV → Normal

7/10
KAPLAN MEDICAL

ANEMIA

Symptoms

Hypersegmented

→ High
B12 / Folate
Liver, Alcohol

HCT

730-35 p

25-30 Tired + Fatigue

20-25 Dyspnea

<20 Confused

Die → Ischemia

MCV → Normal

La
KAPLAN MEDICAL

ANEMIA

Symptoms

Hypersegmented

→ High
B12 / Folate
Liver, Alcohol

HCT

730-35

25-30

igu

MCV → Normal

Use d

ilo

→ Low
Iron

KAPLAN MEDICAL

ANEMIA

SYMPTOMS

Hypersegmented → High B12 / Folate
Liver, Alcohol

HCT

730-35 %

25-30 Tired + Fatigue

20-25 Dyspnea

<20 Confused

Die → Ischemia

MCV → Normal

Low sideroblastic
Iron deficiency
Thalassemia

KAPLAN MEDICAL

ANEMIA

Symptoms

Hypersegmented

→ High
B12 / Folate
Liver, Alcohol

HCT

730-35

25-30 Tired + Fatigue

20-25 Dizziness

<20 Confused

Pre-Ischemia

MCV → Normal

→ Low Sideroblastic
Iron, KAPLAN MEDICAL
Thalassemia

Anemia

Symptoms

Hypersegmented

→ High B12 / Folate
Liver, Alcohol

HCT

> 30 - 35 %

25 - 30 Tired / Fatigue

20 - 25 Dyspnea

< 20 - Confused

Die → Ischemia

MCV → Normal

→ Low Sideroblastic
Iron, chronic
Thalassemia

KAPLAN

MEDICAL

Anemia

Symptoms

Flaccid
Segmented

→ High
B12/Folate
Liver, Alcohol

HCT

730-

25-30

20

Fatigue

Stupor

MCV → Normal

Loss/Injury

→ Low sideroblastic
Iron, Chronic
Thalassemia

KAPLAN MEDICAL

Anemia

Causes

Hypersegmented

→ High
B12 / Folate
Liver, Alcohol

Tired / Fatigue
Dyspnea

MCV → Normal

(Loss / Hemolysis)

→ Low Sideroblastic
Iron, KAPLAN MEDICAL
Thrombocytopenia

ANEMIA

SYMPTOMS

↑↑↑↑↑

→ High
B12 / Folate
Liver / Alcohol

HCT

730-35

25-30 TIRE

20-25

<20

MCV → Normal

(Loss / Hemolysis)

cardiac
KAPLAN MEDICAL

Anemia

Symptoms

Hypersegmented

→ High
B12 / Folate
(Liver, Alcohol)

50
30 Tired / Fatigue
25 Dyspnea
- Confuse

MCV → Normal
(Loss / Hemolysis)

→ Low Sideroblastic
Iron, Chronic
Thalassemia

KAPLAN

MEDICAL

Anemia

Symptoms

Hypersegmented

→ High
B12 / Folate
Liver, Alcohol

T

10-35 %

5-30 Tired / Fatigue

1-25 Dyspnea

Confused

→ Ischemia

MCV Normal

(Loss / Hemolysis)

→ Low Sideroblastic
Iron, Chelation
Thalassemia

KAPLAN

MEDICAL

Anemia

Symptoms

HCT

30-35 %

25-30 Tired

20-25 Dyspnea

<20

High
B12 / Folate
Liver / Alcohol

MCV Normal

Loss / Hemolysis

KAPLAN

MEDICAL

Introduction to Anemia

End

↓ MCV

as T_1
 T_2

⊖
Tired + fatigued
Dyspnea
Confusion
e.g. T_1

KAPLAN MEDICAL

ANEMIA

Symptoms $\left\{ \begin{array}{l} \text{↑} \\ \text{↓} \end{array} \right.$

HCT

730

25-30 Fatigue

20-25

<20

↓ MCV

↓ MCV

T_S

red fatigue
dyspnea
diffuse
ischemia

Anemia

Symptoms

HCT

730-35

25-30

20-25

<20

↓mcv

Iron

Anemic

S

fatigue
weak
use
chemo

Major

Minor

Chemist

Substance

Iron

Chronic

↓ MCV

Sideroblastic

ANEMIA

Symptoms $\left\{ \begin{array}{l} T \\ S \end{array} \right.$

HCT

730

25-30

20-

<10

fatigue

ION

Chronic

↓MC

ANEMIA

Symptoms

HCT

730-3

25-30

20-2

<20

Loss
Iron
1mg/Day

Chronic

↓ MCV

ANEMIA

Symptoms

HCT

30-35 %

25-30 Tired + fatigued

20-25 Dyspnea

Confuse

Die \Rightarrow Ischemia

ANEMIA

SYMPTOMS

↑
↓

↑ Loss

Iron

1 mg/day

fatigue
Dyspnea
Hemoglobin
ischemia

KAPLAN MEDICAL

ANEMIA

Symptoms

↑

35%

3Q Tired + Fatigue

Displeasure

Use

anemia

↑ Loss

IRON

1 mg / Day

SECTION 5

15

need

Loss

Iron

1941

Chen

25 Meditation
Distraction

ANEMIA

Symptoms

Hb

730

25-

20-

<

T_S

fatigue

weak

↑loss

Iron

1mg/Day

need

Prescription

Chronic

Anemia

Symptoms \uparrow

fatigue
Dyspnea
Anorexia
Anemia

Loss

Iron

Need

1 mg/day

Pregnant 5-6 mg/day

Absorb

ANEMIA

SYMPTOMS

HCT

730-5

25-30

20-

<20

fatigue

weak

need

↑loss

Iron

1mg/day

Pregnant 5-6 mg/day,
Absorb max 4mg/day

Chronic

↓mc

ANEMIA

Symptoms \uparrow

Tired + Fatigue
Dyspnea

\uparrow Loss

Iron

Need

1 mg/day

Pregnant 5-6 mg/day

Absorb max 4 mg/day

KAPLAN MEDICAL

ANEMIA

Symptoms $\left\{ \begin{array}{l} S_1 \\ S_2 \end{array} \right.$

HCT

730-

25-3

+ Fatigue

asthma

so

so

so

↑ Loss

Iron

Need

1 mg/day

Pregnant 5-6 mg/day

Absorb max 4 mg/day

KAPLAN MEDICAL

ANEMIA

Symptoms \uparrow

HCT

730-35 ϕ

25-30 Tired/Fatigue

Dyspnea

Confuse

Schena

Loss

Iron

Need

1mg/day

Pregnant 5-6 mg/day

Absorb max 4mg/day

Excrete

ANEMIA

S

S T

H

A

2

Head fatigue
Disturbance
FUSE
ANEMIA

Loss

IRON

Need

1 mg/day

PREGNANT 5-6 mg/day

Absorb max 4 mg/day

Excrete

Ch

ANEMIA

SYMPTOMS

HCT

730-35

25-30

20-25

TIGU

Need

↑loss

IRON

1mg/day

PREGNANT 5-6 mg/day

Absorb max 4mg/day

Excrete

Anemia

Symptoms

10-35

10-30 Tired + Fatigue

10-25 Dyspnea

10-20 Confuse

Die > Ischemia

Loss

Iron

Need

1mg/day

Prescribe 5-6 mg/day

Absorb Max 4mg/day

Excrete

↓ MCV

mic

Sideroblastic

Thalassemia

MCV

MCV

Sideroblastic

Thalassemia

Meiosis

Hemochromatosis

Liver

Heart

Pancreas

ANEMIA

Symptoms

HCT

730-35 %

25-30 Tired

20-25 Dyspnea

<20 - Co

D

Need

Loss

Iron

1 mg/day

Prescribe 5-6 mg/day

Absorb max 4

Excrete

Chronic

↓ MCV

Chronic

Sideroblastic

Thalassemia

KAPLAN MEDICAL

↓ MCV

Sideroblastic

Thalassemia

MCV

thrombocytopenia

Liver

Heart

Pancreas

Neutropenia

Transfusion

2-4 units

MCV

Sideroblastic

Thalassemia

MCA

hemochromatosis

Liver

Heart

Diabetes

Infertility

Transfusion

2-4 units

Packed Cells

400 ml

ANEMIA

Symptoms \uparrow

HCT

730-35 \downarrow

25-30 Tired + fatigue

20-25 Dyspnea

<20 Confuse

Die \rightarrow Ischemia

\uparrow loss

Iron

1 mg/day

5-6 mg/day

max 4 mg/day

Chronic

\downarrow D

↓ MCV

Iron

Sideroblastic

Thalassemia

MCV

Hemoglobin

Liver

Heart

Paroxysmal

nocturnal

Transfusion

2

Packed Cell

100/100

SSOM / unit

↓ MCV

mic

Sideroblastic

Thalassemia

MCV

Microcytic

or

Heart

- Pancreas

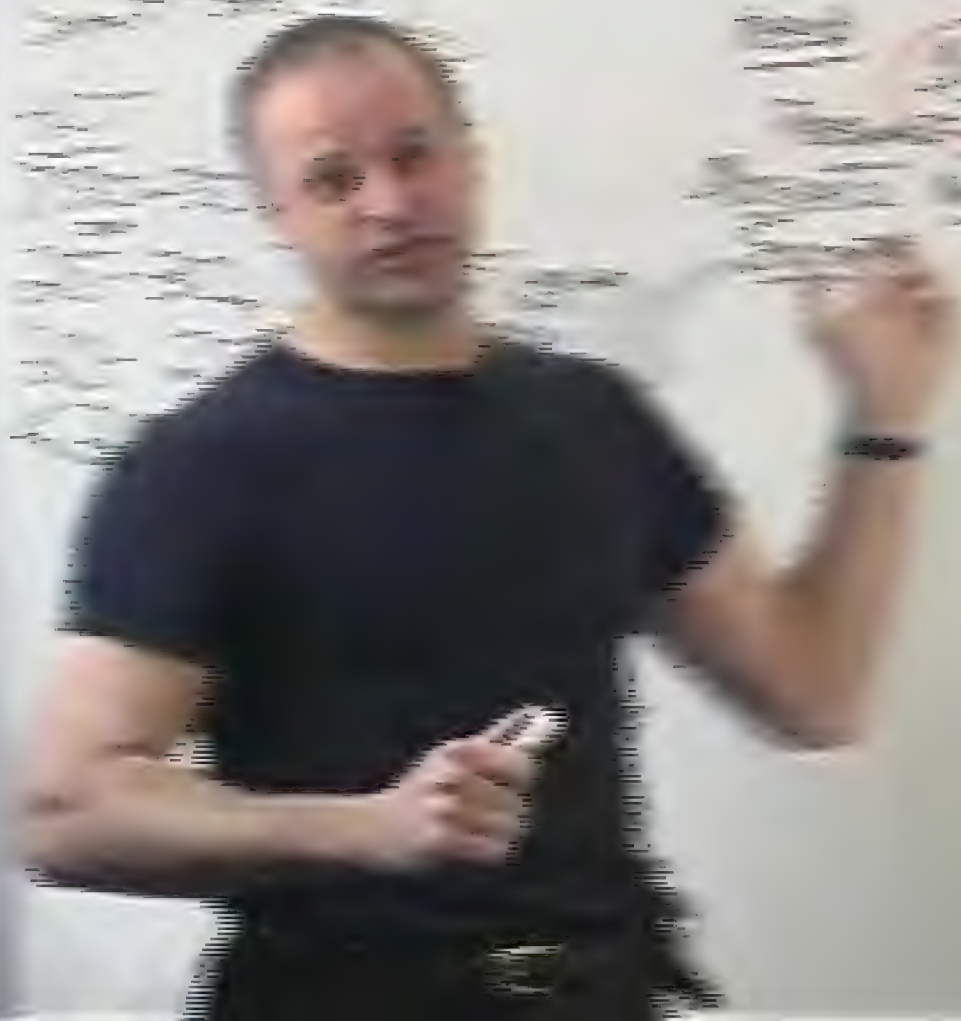
- Nephritis

Transfusion

2- Packed cells

1 mg/ml

350 ml/unit



KAPLAN MEDICAL

Anemia

Symptoms

HCT

730-1

25-30

20-25

<20

Fatigue

Headache

Loss

Iron

1mg/day

Pregnant 5-6mg/day

Absorb Max 4mg/day

Excrete

Need

Chronic

↓ m

↓ MCV

Chronic

Sideroblastic

Thalassemia

Microcytic

Hemoglobin

Liver

Heart

Posterior

Transfusions

Packed RBC

1mg/kg

SSD

KAPLAN MEDICAL

ANEMIA

Symptoms

HCT

730-35

25-30 Tired

20-25

<20

need

↑loss

Iron

1mg/day

Prescribe 50mg/day

Absorb max 4mg/day

Excrete

ANEMIA

SYMPTOMS

HCT

30-35 %

25-30 Tired + Fatigue

20-25 Dyspnea

<20 - Confuse

De \Rightarrow Ischemia

Loss

Iron

Need

Pre

Absor

Exc

mg/day

(mg) Day

Chronic ↓ MCV

Sideroblastic

Thalassemia

MCV

hemochromatosis

Liver

Heart

Pancreas

Infertility

Transfusions

2.

Packed Cell

4 ml / ml

350 ml / unit

Desferrioxamine

IMCV

Chemist

Substance

Thalassaemia

Myeloma

Hemoglobin

Leukemia

Lymphoma

Plasma cell myeloma

Multiple myeloma

Primary myelofibrosis

Myeloid leukemia

Acute leukemia

Chronic leukemia

Myelodysplastic syndrome

Myeloid sarcoma

Myeloid blastoma

Anemia

Symptoms

Tired + fatigue
Dyspnea
Pale

Loss

Iron

need

1mg/day

Pregnant 3-6mg/day

Adults max 4mg/day

excrete

Chronic

Anemia

Symptoms

- 1. Tired + fatigued
- 2. Dyspnea
- 3. Confused
- 4. Ischemia

→ Loss

need

Iron

1 mg/day

Pregnant 3-6 mg/day,
Absorb max 4 mg/day,
Excrete

Chronic

S $\frac{+}{-}$ $\frac{+}{-}$

tired + fatigue =
 dyspnea
 confuse
 Ischemia

need \rightarrow loss \rightarrow iron
Pregnant
Absorb
Excrete

Chronic \downarrow MCV Sideroblasts

60% of Fe

→ Loss

Need

Iron

1mg/Day

~~Pregnant 5-6mg/day~~

Absorb max 4mg/Day

Excrete

↓ MCV

Chronic

Siderob

60% of Fetus

Tired HCT 30
M 68

ANEMIA

SYMPTOMS

HCT

730-35

25-30 Tired

20-25

<20

→ Loss

need

Iron

1mg/day

PREGNANT 5-6mg/day

DSOR max 4mg/day

Excrete

Chronic

↓ MC

60-80

Tired

STOOL ⊖ x

ANEMIA

SYMPTOMS

HCT

730-35

25-30 TIRE

20-25

<20

→ Loss

Need

Iron

1mg/day

PREGNANT 5-6mg/day

Absorb max 4mg/day

Excrete

Chronic

60

TIRE

STOOL

ANEMIA

Symptoms

HCT

730-35

25-30

20-25

<20

→ Loss

Need

Iron

1mg/Day

Pregnant ~~5-6 mg/day~~

Absorb max 4mg/Day

Excrete

Chronic

60

71

Stool

SCo

KAPLAN MEDICAL

EMIA
SYMPTOMS

T
0-35
-30
-25
20

→ Loss

Need

Iron

1mg/day

Pregnant ~~3~~ 6mg/day,
Absorb max 4mg/day,
Excrete

↓ MCV

Chronic

60 ♂ OFFICE
TIRED HOT

STOOL ⊖ x3
COLONOSCOPY

→ ↑loss

Need

Iron

1mg/Day

Pregnant 3-6mg/Day

Absorb Max 4mg/Day

Excrete

↓MCV

Chronic

Siderob

60 ♂ OFFICE

Tired HCT 30

Hgb 68

Stool ⊖ x3

→ Colonoscopy

ANEMIA

Symptoms

HCT

730-35

25-30 Tired + fatigued

20-25 Dyspnea

<20 - C

→ Loss

Iron

1mg/day

~~6mg/day~~

max 4mg/day

excrete

Chronic

↓MCV

60 ♂

tired

stool ⊖ x

Colonos

Anemia

Symptoms

↓

- 15 Tired/Fatigue
- 25 Dyspnea
- 35 Confusion
- Die → Ischemia

→ Loss

Need

Iron

1 mg/Day

~~Pregnant 5-6 mg/Day~~

Absorb max 4 mg/Day

Excrete

ANEMIA

Symptoms

HCT

730-3

25-30

20-

fatigue

req

GI

Loss

Need

Iron

1mg/day

~~Pregnant 3-6mg/day~~

Absorb max 4mg/day

Excrete

Chronic

↓ m

ANEMIA

SYMPTOMS

HCT

730-35

25-30

20-25

15-20

GI

Loss

Need

IRON

1mg/Day

Pregnant ~~5-6 mg/day~~

Absorb max 4mg/Day

Excrete

Chro

KAPLAN MEDICAL

ANEMIA

Symptoms

HCT

730-35

25-30

20-25

<20

GI

Loss

Need

Iron

1mg/Day

Pregnant 5-6mg/Day

Absorb max 4mg/Day

Excrete

Chronic

↓mo

Iron

Symptoms

CT

30-35

5-30 Tired + a

0-25 Dysp

20 - Col

Die

GI ↑loss

need

Iron

1mg/day

Pregnant 5-6mg/day

Adults max 4mg/day

Excrete

↓MCV

Chronic

Anemia

anemia

symptoms

ET

30-35

5-30 Tired/fatig

0-25 Dyspnea

20 - Cold

Diet

GI Loss

need

Iron

1mg/day

Pregnant 5-6mg/day

bsorb max 4mg/day

Excrete

↓ MCV

Chronic

Any RA

Cancer

→ ESRD

ANEMIA

SYMPTOMS

HCT

730-35

25-30

20-25

<20

GI

Loss

Need

IRON

1mg/Day

Pregnant 5-6mg/Day

Absorb max 4mg/Day

Excrete

KAPLAN MEDICAL

ANEMIA

SYMPTOMS

↑

35

3Q Tired Fatigue

ANEMIA

(GI)

(Loss)

Need

Iron

(1mg/day)

PREGNANT 5-6mg/day

Absorb Max 4mg/day

Excrete

ANEMIA

Symptoms $\left\{ \begin{array}{l} T \\ S \end{array} \right.$

1. Fatigue
2. Headache
3. Dizziness

GI Loss

Need

Iron

1 mg/day

Pregnant 5-6 mg/day

Absorb max 15 mg/day

Excrete

ANEMIA

Symptoms

HCT

730-35

25-30

20-25

<20

GI

Loss

Need

Iron

1mg/day

Pregnant 5-6mg/day

Absorb Max 4mg/day

Excrete

KAPLAN MEDICAL

ANEMIA

Symptoms

HCT

730-35

25-30 TIRE

20-25 DR

<20

(GI)

(Loss)

Need

IRON

(1mg/Day)

PRESENT 5-6 mg/Day

Absorb Max 4mg/Day

Excrete

ANEMIA

SYMPTOMS

HCT

730-35

25-30

20-25

<20

GI Loss

Need

IRON

1mg/day

Pregnant 5-6mg/day,
Absorb max 4mg/day,
Excrete

↓ MCV

Chronic

Any RA

Cancer
ESRD

(GI) (Loss)

Need

Iron

(1mg/day)

PREGNANT ~~5-6 mg/day~~
Absorb max 4mg/day
Excrete

Chronic
Any ~~for~~
Cause
→ ~~SS~~ NO

KAPLAN MEDICAL

GI ↑loss

↓MCV

Iron

1mg/Day

~~max 5-6mg/Day~~

max 4mg/Day

replete

Chronic

Any RA

Cancer

→ RD

Sideroblastic

Lead

ms ↑

Tired + Fatigue
Dyspnea
Co
Re

(GI) (Loss)

↓ MCV

Need

IRON

Iron

PREGNANT

Absorb Max

Excrete

Chronic

Any RA

Causes
ESRD

Sideroblastic

Alcohol

Anemia

Symptoms

HCT

730-350

25-30%

20-25%

<20%

GI

Loss

Need

Iron

1mg/day

Prescribe 5-6mg/day
Absorb max 4mg/day
Excrete

Chronic

Any Rx

Causes
NO

ANEMIA

Symptoms

HCT

730-35

25-30 Tired + at

20-25 Dyspnea

<20 -

GI

Loss

Need

Iron

1mg/day

Pregnant 5-6mg/day

Absorb

max 4mg/day

Excrete

Chronic

Any RA

→ ESRD

ANEMIA

Symptoms \uparrow

HCT

70-35 \downarrow

25-30 Tired + Fatig

20-25 Dyspnea

<20 - Co

Die

(GI) Loss

need

Iron

1 mg/day

pregnant 5-6 mg/day,
ortho max 4 mg/day

crete

\downarrow MC

Chronic

Any RA

ESRD

ANEMIA

Symptoms

HCT

730-35

25-30 Tired

20-25 Dyspnea

<20 - Confusion

Dr.

(GI) → (Loss)

Need

Iron

(1mg/Day)

Pregnant 3-6mg/Day,
Absorb max 4mg/Day,
Excrete

↓ MC

Chronic

Any RA

→ Calcif
ESRD

GI Loss

↓MCR

need Iron

5mg/day
4mg/day
Excess

Chronic
Any RA
Causes
ESRD

Sideroblastic

Alcohol
Lead

↓ MCV

Chronic

Any RA
Causes
ESRD

Sideroblastic

Alcohol
Lead

Holmes

MCV

Thrombocytopenia

Liver

Heart

Parasites
Infection

Transfusion

2-
Packed Cells

100 / mL

350 mL / UNIT

Desferrioxamine

KAPLAN MEDICAL

↓ MCV

Chronic

Any

Sideroblastic

Alcohol
Lead
INH

Thalassemia
Trait

MCTD

hemochromatosis

Liver

Heart

Pancreas

Intestine

Transfusions

2-3

1 mg/mL

350 mL

Disfigurement

KAPLAN MEDICAL

Loss

Iron

mg/day

5-6 mg/day

max 4 mg/day

↓ MCV

Chronic

Any RA

→ ESRD

Sideroblastic

Alcohol
Lead, INH

Thalassemia

Trait

↓↓↓ MCV

m
the
live
the
- m
Tra
2-
Pack
4 mg/
350
Dist

ANEMIA

SYMPTOMS

HCT

>30

25-

20-

<20

fatigue

weak

so

pho

GI ↑loss

need

Iron

1mg/day

Pregnant 5-6 mg/day
Absorb max 4mg/day
Excrete

Chronic

Any RA
→ ESRD

↓m

ANEMIA

Symptoms \uparrow

HCT

730-35 ρ

25-30 Tired + \bar{a}

20-25 D

<20

GI

Loss

Need

Iron

1mg/Day

Pregnant 5-6 mg/Day

Postpartum max 4mg/Day

Excrete

Chronic
Any \bar{a}
Cause
 \rightarrow NO



ANEMIA

Symptoms

↑↑
↓

(GI)

(Loss)

need

Iron

(1mg/Day)

Pregnant ~~5-6mg/Day~~
Absorb Max 4mg/Day

Excrete

Chronic
Any RBC
Count
↓ ESR

Tired/Fatigue

ANEMIA

Symptoms

HCT

730-35

25-30

20-25

<20

Tissue

GI

Loss

Need

Iron

1mg/day

Pregnant 3-6mg/day

Absorb

Max 4mg/day

Excrete

Chronic
Any RA
Cancer
ESRD

GI Loss

Need

Iron

1 mg/day

Absorb max 4 mg/day
Excrete

↓ MCV

Chronic

Any RD
→ RD

Sideroblastic

Alcohol
Lead

Th
TS
↓
↑

ANEMIA

Symptoms

HCT

730-35 p

25-30 Tired

20-25 Dizzy

<20 -

GI

Loss

need

Iron

1mg/day

Pregnant 5-6 mg/day

Absorb max 4mg/day

Excrete

Chronic

Any pt

Causes

ANCA

Anemia

Symptoms

H/C

730

25-30

20-25

<20

Fatigue

GI

Loss

need

Iron

1mg/day

Pregnant ~~5-6 mg/day~~

Absorb max 4mg/day

Excrete

Chronic

Any RA

→ ESRD

ANEMIA

SYMPTOMS

HCT

730-3

25-30

20-25

<

↑

tigue

req

GT

Loss

Need

IRON

1mg/Day

Pregnant 5-6 mg/Day

Absorb Max 4mg/Day

Excrete

Chronic

Any RA

Causes

→ ESRD

↓ m



KAPLAN MEDICAL

Loss

Iron

mg/Day

5-6 mg/Day,
max 4 mg/Day

↓ MCV

Chronic

Sideroblastic

Alcohol
Lead, INH

Thalassemia

Treat

↓↓↓ MCV

↑ Red cell
Count

Smear

Target Cells

m

the

live

the

Pa

-M

Trans

2-

Pack

1 mg

3500

Dist

ANEMIA

Symptoms

HCT

730-350

25-35

20-30

<20

TTSS

TIGU =

GI

Loss

Need

Iron

1mg/Day

Pregnant ~~5~~ 6mg/Day

Absorb max 4mg/Day

Excrete

Chronic

Any RA

→ Cancer
ESRD



ANEMIA

SYMPTOMS

HCT

730-35

25-30 Tired

20-25 Dyspnea

<20

(GI) ↑loss

need

IRON

1mg/day

Pregnant 5-6mg/day

Absorb Max 4mg/day

Excrete

Chronic

Any RA

→ Cancer
ESRD

KAPLAN MEDICAL

Loss

Iron

40 mg/Day

5-6 mg/Day

max 4 mg/Day

↓ MCV

Chronic
Any RA
Cancers
→ ESRD

Sideroblastic

Alcohol
Lead
INH

Thalassemia

Trait

↓↓↓ MCV

↑ Red cell
Count

Smear

Target Cells

M

then

Live

the

Pa

-N

IRON

2

Dacker

1 mg/

SSON

Dster

EMIA

SYMPTOMS

T

0-35

-30

25

20

GI Loss

Need

Iron

1mg/Day

Pregnant 5-6mg/Day

Absorb Max 4mg/Day

Excrete

70%

↓ MCV

Chronic

Any RA

Causes
ESRD

S
A

ANEMIA

Symptoms

HCT

730

25-30

20-25

<20

fatigue
weakness
pallor

GI

Loss

Need

Iron

1mg/Day

~~Pregnant 5-6mg/Day~~

Absorb max 4mg/Day

Excrete

TRDW

!!!

↓ MCV

Chronic

Any RA

→ Causes
ESRD

ANEMIA

Symptoms

HCT

730-35

25-30

20-25

<20

GI

Loss

Need

Iron

1mg/Day

Pregnant 5-6mg/Day

Absorb max 4mg/Day

Excrete

↑RDW

○○○

Chronic

Any RA

→ Cancer
→ ESRD

ANEMIA

Symptoms \uparrow

35 p

30 Tired & Fatigue

Disproportionate

Excessive

hemio

GI Loss

Need

Iron

1 mg/day

Pregnant 3-6 mg/day

Absorb max 4 mg/day

Excrete

TRDW

○○○○○○○○

Chronic

Any RA

Causes

ESRD

ANEMIA

Symptoms

HCT

730-35

25-30

20

15

GI

↑loss

Need

Iron

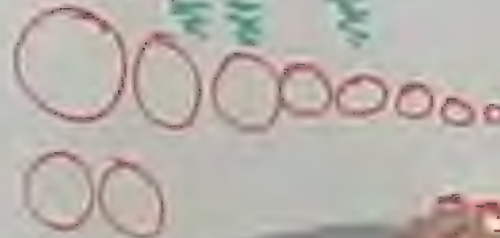
1mg/day

Pregnant ~~5-6 mg/day~~

Absorb max 4mg/day

Excrete

↑RDW



Chronic

Any

cause

RDW

ANEMIA

Symptoms

HCT

73

25

fatigue
dyspnea
confusion

anemia

GI Loss

Need

Iron

1mg/day

Pregnant 5-6mg/day
Absorb max 4mg/day

Excrete

TRDW

○○○○○○○○○○

○○

○○

ANEMIA

Symptoms

fatigue
Dyspnea
Confusion
Die \Rightarrow Ischemia

GI Loss

Need

Iron

1mg/day

Pregnant 5-6mg/day,
Absorb Max 4mg/day

Excrete

↑ RDW

○○○○○○○○○○

Chronic
Any ~~RA~~
Cancer
 \Rightarrow ~~ESRD~~

ANEMIA

Symptoms

HCT

730-35 ϕ

25-30 Tired

20-25 Dyspnea

<20

GI

Loss

Need

Iron

1mg/day

Pregnant ~~5-6 mg/day~~

Absorb max 4mg/day

Secrete

Chronic

Any ~~RA~~

Cancer

~~ESRD~~

↓ TN

ANEMIA

Symptoms

HCT

730-35

25-30

20-25

<20

GI

Loss

need

Iron

1mg/day

Pregnant 5-6mg/day

Absorb max 4mg/day

Excrete

↑RDW

○ ○ ○ ○ ○ ○ ○ ○ ○ ○

↑

Chronic
Any
Cause
→ RDW

Anemia

Symptoms

HCT

730-

25-30

20-

Fatigue

weak

GI Loss

Need

Iron

1mg/day

Prescribe 3-6 mg/day
Absorb Max 4mg/day

Excrete

↑RDW

○ ○ ○ ○ ○ ○ ○ ○ ○ ○

↑

New

Chronic
Any RBC
Count
ESR

Anemia

Symptoms

HT

10-35 ρ

30 Tired/Fatigue
Dizziness

GI, Loss

Need

Iron

1mg/day

Prenatal 5-6 mg/day

Absorb max 4mg/day

Secrete

UUUUUUUUUU
↑ New

ANEMIA

Symptoms

HCT

730-

25-30

20

fatigue

weak

GI

Loss

Need

Iron

1mg/day

Pregnant 5-6mg/day

Absorb max 4mg/day

Excrete

FRDW

Hg

Hs

Hs

Hs

Hs

2000

↑

↑

New

ANEMIA

Symptoms

HCT

730-35

25-30

20-25

<20

GI Loss

Need

Iron

1mg/Day

Pregnant ~~5-6 mg/Day~~

Absorb max 4mg/Day

Excrete

↑RDW

H₂ H₃ H₄ H₅ H₆ H₇ H₈ H₉ H₁₀

↑

↑
New

ANEMIA

SYMPTOMS

Tired + Fatigue
Dyspnea

(GI) ↑ Loss

Need

Iron

1 mg/day

PREGNANT 5-6 mg/day
Absorb max 4 mg/day

Excrete

↑ RDW

> (H_g) (H_g) (H_g) (H_g) (H_g) (H_g) (H_g) (H_g)

↑

↑
New

KAPLAN MEDICAL

ANEMIA

Symptoms

ET

10-35 p

15-30 Tired + fatigued

20-25 Dyspnea

Confused

He > Ischemic

(GI) ↑ Loss

Need

Iron

(1 mg/day)

Pregnant 5-6 mg/day

Absorb max 4 mg/day

Excrete

↑ RDW

> (H) (H) (H) (H) (H) (H) (H) (H) (H) (H)

↑ New

ANEMIA

Symptoms

HCT

730-35

25-30 Tired

20-25

<20

GI ↑loss

Need

Iron

1mg/day

Pregnant 5-6mg/day

Max 4mg/day

Excrete

↑RDW

> (H_g) (H_g) (H_g) (H_g) (H_g) (H_g) (H_g) (H_g) (H_g) (H_g)

5
12

6
Tiredness
Dysphagia
Confuse
> Seizure

GT, 1/10/15

Need

1/10/15

1/10/15

Neuro 5 & 6
Aspirin max 4g/day
Excrete

↑ RDW



↓ MCV

1/10/15

Sider

Alco
Lea

ANEMIA

Symptoms

Tired + Fatigue
Dyspnea
Pallor

GI Loss

Need

Iron

1mg/day

Pregnant 5-6mg/day,
Absorb max 4mg/day,
Excrete

↑ RDW

H₂O New

Chro
Any R
Ca
→
0000

↓ MCV

Sideroblastic

Alcohol / Lead / INH

Thalassemia
Trait

↓↓↓ MCV
↑ Red cell
Count

Smear

Target cells

Mentor

Thrombocytopenia

Liver

Heart

Pancreas

Infertility

Transfused

2-

Packed cells

1 mg / mL

350 mL UNIT

Refractory

ANEMIA

SYMPTOMS

HCT

730-35

25-30

20-25

<20

GI

Loss

Need

IRON

1mg/day

Pregnant ~~5-6 mg/day~~
Absorb max 4mg/day

KAPLAN MEDICAL

ANEMIA

Symptoms

HCT

730-1

25-30

20

Fatigue

Weak

GI

Loss

Need

Iron

1mg/Day

Pregnant 5-6mg/Day

Absorb Max 4mg/Day

Chronic
Any RA

Cancer
ESRD

0000

KAPLAN MEDICAL

GT \rightarrow Loss

need

IRON

1 mg/day

PREGNANT 5-6 mg/day

Absorb Max 4 mg/day

↓ IRON

KAPLAN MEDICAL

(GI) ↑ Loss

↓ MCV

Need

Iron

1 mg/Day

Pregnant 3-6 mg/Day,
Absorb max 4 mg/Day

↓ Iron

↓ Fe

Chronic

Any RA

Colours

ESRD

0000

↓ Fe

(GI) ↑ Loss

need

IRON

(1 mg/Day)

Pregnant 3-6 mg/Day,
Absorb Max 4 mg/Day

(↓ FERRITIN)

↓ Fe

Chro
Any R
Ca
→ ESR
0000

↓ Fe

GI \rightarrow Loss

Need

Iron

1 mg/Day

PREGNANT ~~5-6 mg/Day~~
Absorb max 4 mg/Day

\downarrow FERRITIN

\downarrow Fe

Chro
Any R
Can
SSR
0000

\downarrow Fe

GI

↑Loss

Need

1

PREGNANT 50mg/day,
Absorb 4mg/day

↓Fe

Chro

Any R
Can
ESR

5000

↓Fe

GI, Loss

Need IRON
1mg/Day

~~Prescribe 3-6 mg/day,~~
Absorb max 4mg/Day

↓ FERRITIN

↓ Fe

KAPLAN MEDICAL

(GI) → (Loss)

Need

Iron

(1 mg/Day)

Pregnant 5 mg/Day

Absorb Max 4 mg/Day

(VITAMIN)

↓ Fe

Chronic

ANY RA

→ SSRI

0000

↓ Fe

(GI) ↑loss

need

Iron

(1 mg/day)

PREGNANT 3-6 mg/day

Absorb Max 4 mg/day

↓
(FERRITIN)

1/3 Normal

↓Fe

↑TIBC

Chronic
Any FA
Calc
ESR
↑

↓Fe

(GT) ↑loss

Need

Iron

(1mg/Day)

~~Pregnant 5-6mg/Day~~

Absorbs max 4mg/Day

↓
(VITAMIN)

✓
3 Normal

↓Fe

↑TIBC

(KARLAN) MEDICAL

BT → ↑loss

need

Iron

1mg/day

Pregnant ~~5-6 mg/day~~
Absorb max 4mg/day

↓Iron/HA

Normal

↓Fe

↑TIBC

Chro
Any
Can
→
0000

↓Fe

(GT) ↑loss

Need

Iron

(1mg/day)

Pregnant ~~3-6 mg/day~~
Absorb Max 4mg/day

↓ transferrin

1/3 Normal

↓ Fe

↑ TIBC

Chronic

Any RA

→ ~~ESRD~~
0000

↓ Fe



GT

Need

Permit
Absorb

Vice

3/10/10

↑TIP

KAPLAN MEDICAL

(GI) ↑loss

need

Iron

(1 mg/day)

PREGNANT 5-6 mg/day

Absorb max 4 mg/day

↓ FERRITIN

↓ FE

↑ TIBC

(GI) → (Loss)

↓ MCV

Need

Iron

(1mg/Day)

Pregnant 5-6mg/Day,
Absorb Max 4mg/Day

Chronic

Any RA
Cancer
→ SSND

0000

(↓TIBC)

3 Normal

↓Fe

↓TIBC

↓Fe

↓TIBC

(GI) ↑loss

↓ MCV

need

Iron

(1mg/Day)

PREGNANT 5-6mg/Day
Absorb Max 4mg/Day

✓
3 Normal
(VITAMIN)

↓ Fe

↑ TIBC

Chronic

Any AA

Cancer

→ ES RD

0000

↑ Ferritin

↓ Fe

↓ TIBC

(GT) ↑ Loss

need

Iron

(1 mg/Day)

~~PREGNANT 5-6 mg/Day~~

Absorb Max 4 mg/Day

✓ ✓ Iron Def

✓ Normal

↓ Fe

↑ TIBC

↑

(KAPLAN) MEDICAL

(GI) → (Loss)

need

Iron

(1 mg/Day)

Pregnant 5-6 mg/Day
Absorb max 4 mg/Day

(V) (Normal) (V) (Iron) (Deficiency)

↓ Fe
= ↑ TIBC

Chronic
Any R
Can
→ SSN
0000

↑ Ferritin
↓ Fe
↓ TIBC

(GI) ↑ Loss

Need

Iron

(1 mg/day)

Pregnant 5-6 mg/day

Absorb max 4 mg

(1/3 Normal)

(↓ Iron Util)

↓ Fe

→ ↑ TIBC

()



need

Im

~~PREGNANT~~

Absorb ma

Vitality

1/3 normal

↓

→ ↑ TIR

KAPLAN MEDICAL



GL (10)
Need
1m
PREGNANT 3
Absorb ma
Free site
Normal
↓
↑ TIR



Need

(I M)

PREGNANT

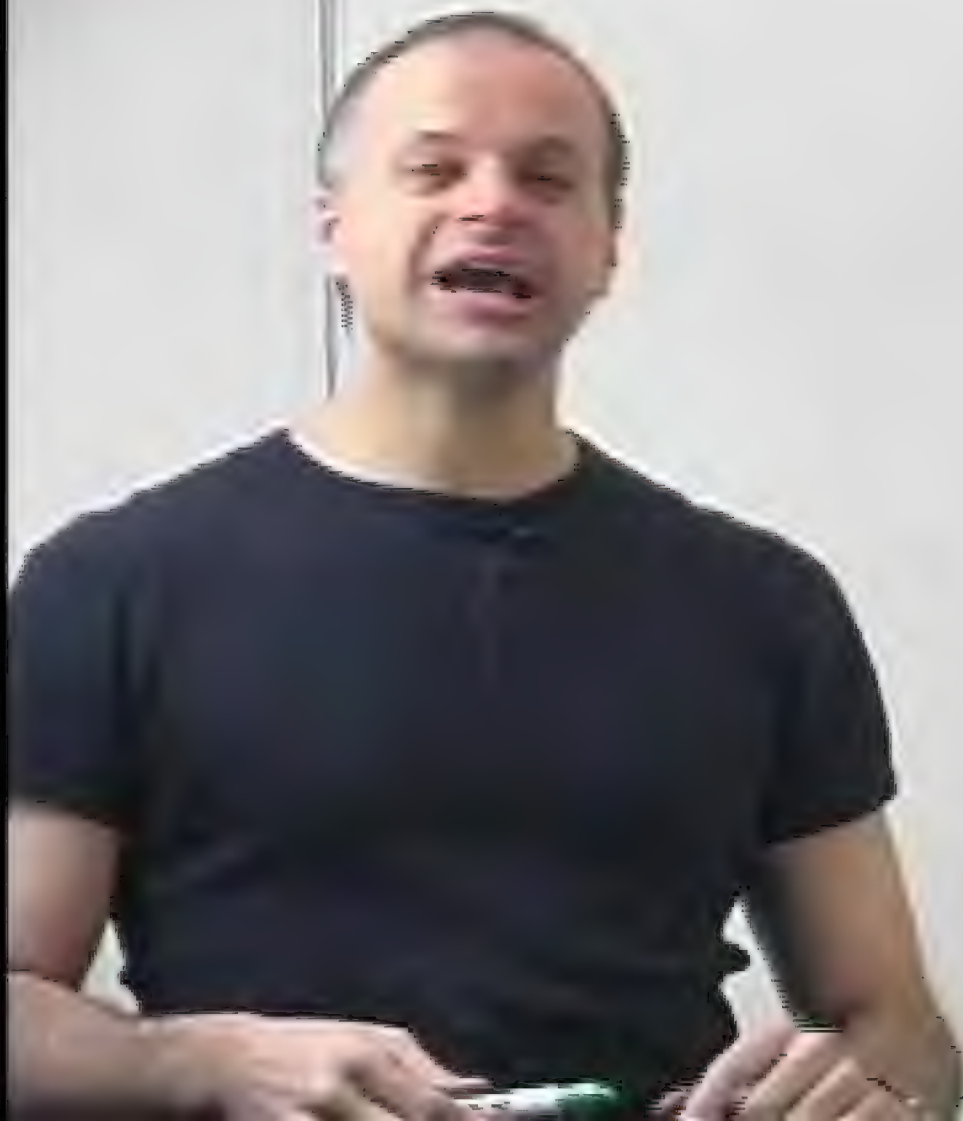
Absorb Ma

(1/3 Normal)

↓ Fertility

↓

⇒ ↑ TIR



GI Loss

Need

Iron

1 mg/day

Pregnant 5-6 mg/day

Absorb max 4 mg

↓
Iron

↓
Normal

↓
Fe

→ ↑ TIBC

KAPLAN MEDICAL

(GI) (Loss)

need Iron
(1mg/day)

Pregnant 5-6mg/day
Absorbs max 4mg/day

(1/3 Normal) (↓ FERRITIN)

↓ Fe
= ↑ TIBC

↓
Chronic
Any RA
Causes
ESRD
OOOO

↑ FERRITIN
↓ Fe
↓ TIBC

(GT) ↑loss

need

Iron

1mg/day

Pregnant 5-6mg/day

Absorb max 4mg/day

↓
VITAMIN

1/3 Normal

↓ Fe

→ ↑ TIBC

Marrow

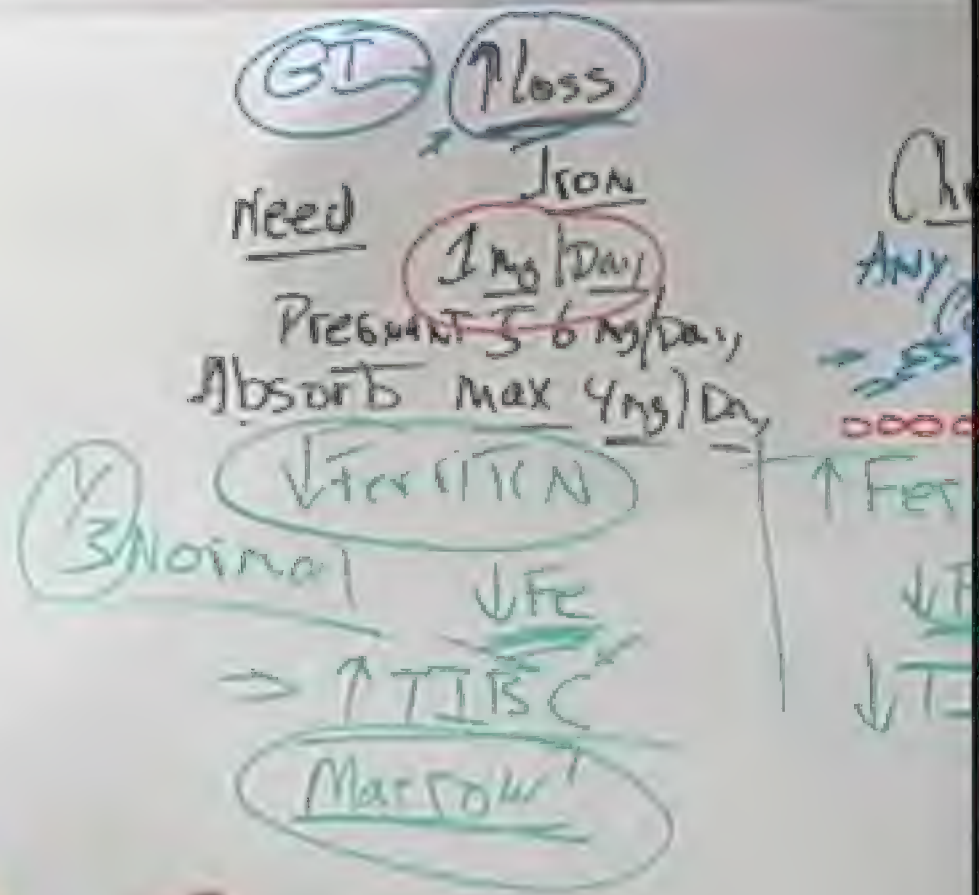
Any

→

↑ Ferr

↓

↓ T





(GT) → ↑ Loss

Need

Iron

(1mg/day)

Pregnant 5-6mg/day

Absorb max 4mg/day

(1/3 normal) ↓ Ferritin

↓ Fe

→ ↑ TIBC

(Macrocytosis)



(GI) → (Loss)

Need Iron
(1mg/Day)

PREGNANT 5-6mg/Day
Absorb max 4mg/Day

(FERTILIZATION)
(Normal) ↓ Fe

→ ↑ TIBC
(Marrow!)



(GT) → (Loss)

need

Iron

(1mg/day)

PREGNANT 5-6mg/day

Absorb max 4mg/day

(VITAMIN)

(3 normal)

↓ Fe

→ ↑ TIBC

(MARGINAL)

KAPLAN MEDICAL

GT ↑ Loss

Need

Iron

1mg/day

Prescribe ~~5~~ 6mg/day

Absorb max 4mg/day

↓ Iron (N)

1/3 Normal

↓ Fe

→ ↑ TIBC

↓ Marrow

(GI) ↑ loss

need Iron

1 mg/day

Pregnant 5-6 mg/day,
Absorb max 4 mg/day

1/3 normal

↓ absorption

↓ life
→ ↑ TIBC

↓ Marrow

KAPLAN MEDICAL

GI ↑ Loss

need

IRON

1 mg/day

PREGNANT 5-6 mg/day

ABSORB max 4 mg/day

↓
VITAMIN C

1/3 normal

↓ Fe

→ ↑ TIBC

Macrocytosis

(GI) ↑loss

need

Iron

(1mg/day)

Pregnant 5-6 mg/day,
Absorb max 4mg/day

(1/3 normal) ↓ferritin

↓Fe
→ ↑TIBC

(Max 200?)

Chc
Any
Ca
↓Fe
↑Fes
↓Fe
↓TIBC

Loss

↓ MCV

Iron
1 mg/day
~~5-6 mg/day~~
max 4 mg/day

(HAI)

↓ Fe

BC

Chronic
Any RA
Cause
ESRD
OOOO

↑ Ferritin

↓ Fe

↓ TIR

Sideroblastic

(Alcohol)
ad, INH

Holstein's

Tran

OO

↓↓↓ MCV

↑ Reticulocyte Count

Smear

(Target Cells)

GI ↑ loss

need

Iron

1 mg/day

Pregnant 5-6 mg/day

Absorb max 4 mg/day

↓
VITAMIN

1/3 Normal

↓ Fe

→ ↑ TIBC

Macrocytosis

(GI) ↑ Loss

↓ MCV

Need

Iron

(1m)

Chronic
Any RA
Cancer
RD

Sideroblastic

(Alcohol)
Lead, INH

Pregnant
Absorb Mo

↓ Ferritin

↑ Ferritin

3 Normal

↓ Fe

Te

Sm



(GT) ↑ loss

need Iron

(1 mg/day)

PREGNANT 5-6 mg/day

Absorb max 4 mg/day

(1/3 normal) ↓ free iron

→ ↑ TIBC

(Marrow)

KAPLAN MEDICAL

GI Loss

Need

Iron

1mg/day

Pregnant ~~5~~ 6mg/day,
Absorb Max 4mg/day

Chronic
Any RA
Cancer
→ ~~ESRD~~
OOOO

✓ Normal ✓ ↑ FerriTIN

↓ Fe

↑ TIBC

Marrow

↑ FerriTIN

↓ Fe

↓ TIBC

↓ MC

GT → Loss

Need

Iron

1mg/day

~~PREGNANT 5-6mg~~

Absorb max 4mg

1/3 Normal

↓ VE IRON

↓ FE

→ ↑ TIBC

Marrow

KAPLAN MEDICAL



GI → Loss

Need

Iron

1mg/day

PREGNANT 5-6 mg/day

Absorb max 4mg

1/3 normal

VITAMIN

↓TIBC

→ ↑TIBC

Marrow!

KAPLAN MEDICAL

GI ↑ Loss

Need

Iron

1 mg/day

Pregnant 5-6 mg/day
Absorb max 4 mg/day

✓ FerriTIN

3 Normal

↓ Fe

→ ↑ TIBC

Macrocytosis

Replenish

GI Loss

↓ MCV

need

Iron

1 mg/day

Pregnant 5-6 mg
Absorb max

Chronic

Any RA

→ ESRD

0000

↑ FERRITIN

↓ Fe

↓ TIBC

✓ Fe

↑ TIBC

Marrow

Replace

GI Loss

Need

Iron

1mg/day

Pregnant 5-6mg/day
Absorb Max 4mg/day

↓
VITAMIN

↓
Fe

↓
RBC

replace

OK
Any

→

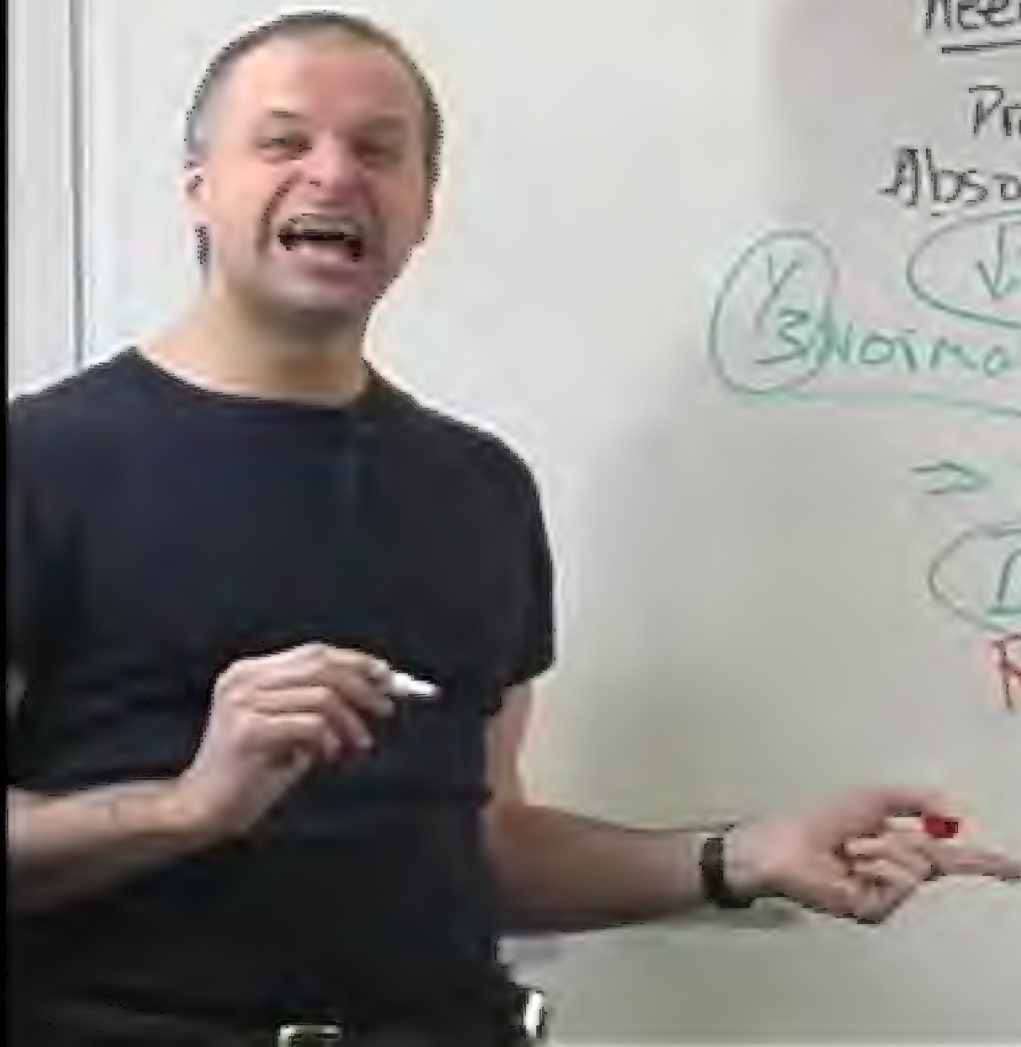
↓
Fe

↓
RBC

↓
Hb

↓
T

KAPLAN MEDICAL



(GI) (Loss)

Need

Iron

(1mg/Day)

Pregnant ~~5~~ 6mg/Day,
Absorb Max 4mg/Day

(✓) (3 Normal) (✓) (FERTILIZATION)

↓ Fe

→ ↑ TIBC

(Marrow) (Replace)

Chronic
Any RA
Cancer
→ ~~ESRD~~
DOOO

↑ FERTILIZATION

↓ Fe

↓ TIBC

↓ m



(GT) (Loss)

Need

Iron

(1mg/Day)

PREGNANT 5-6mg/Day
Absorb Max 4mg/Day

(Verification)

(1/3 Normal)

↓ Fe

→ ↑ TIBC

(Macrocytosis)

Replace

KAPLAN MEDICAL

(GI) ↑ Loss

Need

Iron

(1 mg/day)

Pregnant ~~5-6 mg/day~~
Absorb max 4 mg/day

(1/3 Normal)

(↓ Ferritin)

↓ Fe

→ ↑ TIBC

(Marrow)
Replace

(GT) (Loss)

need Iron

(1 mg/day)

Pregnant 5-6 mg/day
Absorb max 4 mg/day

(V) (normal) (V) (normal)

→ ↑ TIBC

(Marrow)
Replace



GT → Loss

need Iron
1 mg/day

Pregnant 5-6 mg/day
Absorb max 4 mg/day

✓ Normal
Transition

↓ Fe
→ ↑ TIBC

Marrow
Replace

GI Loss

need

IRON

1 mg/day

PREGNANT 5-6 mg/day
Absorb max 4 mg/day

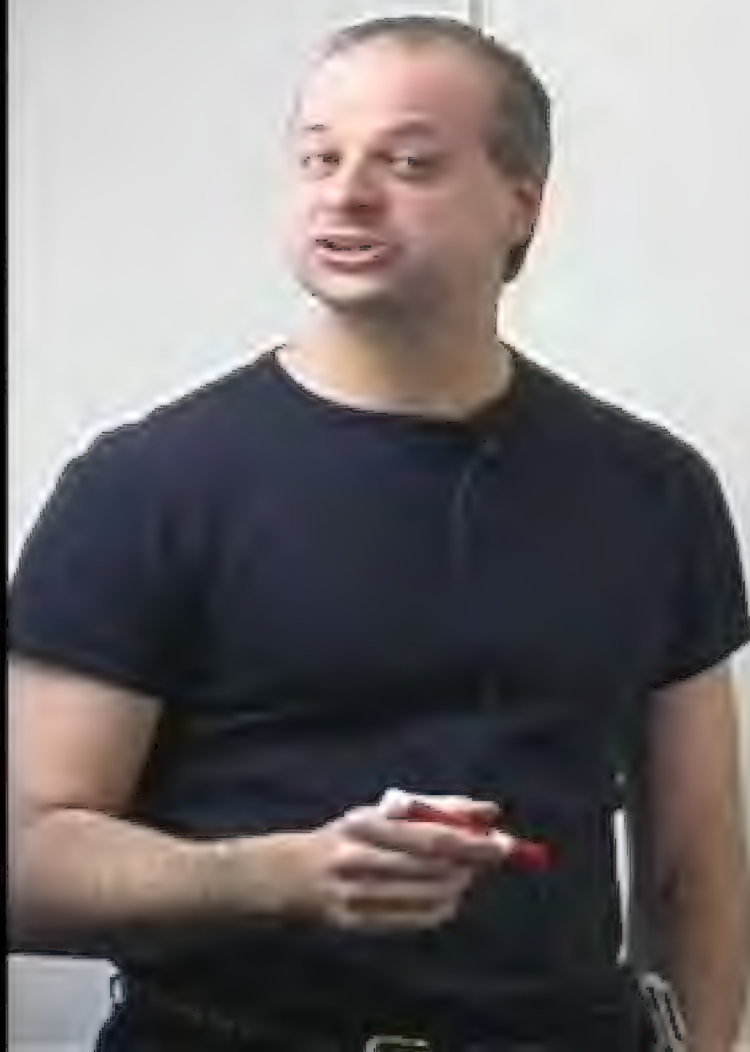
Y
3 Normal

↓
VITAMIN

↓
Fe

→ ↑ TIBC

Marrow!
Replace



GT → Loss
Need IRON
1mg/day
~~PREGNANT 5-6mg/day~~
Absorb max 4mg/day
✓ Normal ✓ VEE IRON
↓ Fe
IM IRON → ↑ TIBC
Marrow
Replace



(GT) ↑ Loss

Need Iron
1mg/day

Pregnant ~~5-6 mg/day~~
Absorb max 4mg/day

(V) 3 Normal
↓ Verification

↓ FE
IM IRON → ↑ TIBC
Marrow Replace

KAPLAN MEDICAL



(GT) ↑loss

need

Iron

(1mg/day)

Pregnant 5-6mg/day

Absorbs max 4mg/day

(1/3 normal) ↓transferrin

↓Fe

↑M
Iron

→ ↑TIBC

(Marrow)
Replace



(GT) ↑ Loss

Need

(1mg/day)

PREGNANT 5-6mg
Absorb max 4mg

(1/3 Normal)

(↓ Transferrin)

↓ M
IRON

↓ TIBC

(Marrow)
Replace

(GT) (Loss)

need Iron
(1mg/day)

~~Pregna 3-6 mg/d~~
Absorb max 4mg

(V) (Vitamin)
3mg/day

(10mg Iron) \Rightarrow \uparrow TIBC
(Macrocytosis)
Replace

(GI) (↑loss)

↓MCR

need

Iron

1 mg/day

6 mg/day

x 4 mg/day

Chronic

Any RA

Cancer

→ ~~ESRD~~

oooo

↑ Ferritin

↓ Fe

↓ TIBC

Sideroblastic

(Alcohol / Lead, INH)

↑ Tc

Smoking

(GI) (Loss)

↓ MCV

need Iron

Day

5 mg/day

4 mg/day

Chronic
Any PA
Cancer
→ ESRO
oooo

Sideroblastic

(Alcohol)
Lead, INH

oo

(↑) (↓) (↑) (↓)

(Smo)

↑ Ferritin
↓ Fe
↓ TIBC

(GT) (Loss)

↓ MCV

need Iron

Abs

Chronic
Any RA
Cancer
→ ~~SSND~~
0000

Sideroblastic

(Alcohol / Lead, INH)

↑ Ferritin
↓ Fe
TIBC <

↑ T₂

GI ↑ Loss

↓ MCV

Iron

1 mg/day

5-6 mg/day

max 4 mg/day

Chronic
Any RA
Cancer
→ ESRD

0000

Sideroblastic

Alcohol /
Lead, INH

↑ Ferritin
↓ Fe
↓ TIBC

↑ Fe

Sweat
TA

GI → ↑loss

↓ MCV

Need

Iron

1 mg/Day

Pregnant 5-6 mg/Day
Absorb Max 4 mg/Day

↓ FERRITIN

↓ Fe

Chronic

Any RA

→ ESR ↑

0000

↑ FERRITIN

↓ Fe

↓ TIBC

KAPLAN MEDICAL

(GT) ↑loss

↓MCR

need

Iron

Chronic

Any RA
Cancer
ESRD

Sideroblastic

Alcohol /
Lead, INH

Pres
Absorb

0000

↑FERRITIN

↓Fe

↓TIBC

↑Fe

PRUSSIAN BLUE

Smear
T

(GI) ↑loss

↓MCR

need

Iron

Pregnant
Absorb

Chronic
Any for
Cancer
→ ESRD
oooo

Sideroblastic

~~Also no
Leads to~~

Normal

↑ Ferritin
↓ Fe
↓ TIBC

↑ Fe
Prussian Blue

Smear

GI Loss

Need

Iron

1mg/Day

Pregnant 3-6mg/Day
Absorb Max 4mg/Day

VITAMIN

↓Fe

↓BC

Chronic

Any RA

Causes

ESRD

↑Ferritin

↓Fe

↓TIBC

KAPLAN MEDICAL

GT → ↑loss

Need

Iron

1mg/Day

Pregnant 5-6mg/Day

Absorbs max 4mg/Day

✓ Anemia

↓ Fe

↓ B12

Chronic

Any RA

→ ES RD

0000

↑ Ferritin

↓ Fe

↓ TIBC

GI → ↑Loss

Need

Iron

1 mg/Day

Pregnant 5-6 mg/Day

Absorbs max 4 mg/Day

↓ Iron

↓ Fe

↓ EPO

↓ Hb

↓ Hct

Chronic

Any RA

→ ~~ESRD~~

0000

↑ Ferritin

↓ Fe

↓ TIBC

GI Loss

↓ MCV

Need

Iron

1mg/day

Prescribe 3-6 mg/day
ESRDs max 4mg/day

Chronic

any pts

Low
ESRD

0000

Vit D

Ferritin

↓ Fe

↓ Fe

↑ TIBC

↓ TIBC

Chronic

Pyridoxine
AL

KAPLAN MEDICAL

(GT) (↑Loss)

Need

IRON

(1mg/Day)

~~Present 5-6mg/Day~~

Absorb Max 4mg/Day

(↓FERRITIN)

(3 Normal)

↓Fe

(IM)

→ ↑TIBC

(Marrow)

Replace

Ch
ANY
→ ES
DOOO

↑FERR

↓Fe

↓TI

(GT) (Loss)

Need

Iron

(1mg/day)

Pregnant ~~5~~ 6mg/day,
Absorb Max 4mg/day

(↑ Feritin)

(Normal)

↓ Fe

→ ↑ TIBC

(Macrocyt)

Replace

Chronic

Any RA

Causes

→ ESR ↑

0000

↑ Feritin

↓ Fe

↓ TIBC

GI ↑ Loss

↓ MCV

Need Iron
4mg/Day
6mg/Day
4mg/Day

Chronic
Any RA
Cancer
→ SS RD
OOOO

Sideroblastic

~~Alcohol~~
~~Lead~~
~~INH~~

1/3
↓ Fe

↑ Ferritin
↓ Fe
↓ TIBC

↑ Fe

RUSSIAN DIP

Pyridoxine
ALA

KAPLAN MEDICAL

↓ MCV

Chronic

Any RA

Leucos
ESRD

0000

↑ Ferritin

Sideroblastic

~~Alcohol~~
~~lead~~

Thalassemia
Trait

↓↓↓ MCV

↑ RBC

↑ Hb

↑ TQ

MCV

thrombocytopenia

Liver

Heart

Polycythemia

Transfusion

2- Packed cell

1 mg / mL

350 mL / L

Dysferritinosis

↓ MCV

Chronic

Any RA
Cancer
SND

0000
FERRITIN
↓ Fe
↓ TIBC

Sideroblastic

~~Alcohol~~
~~Lead~~

Phthalocyanine +
Treat

↓ MCV

Chronic

Any ~~for~~ for

~~ESND~~

oooo

↑ FERRITIN

Sideroblastic

~~Alcohol~~
~~Lead~~

↑ Fe

Gran Blue

oxine

A

Thalassemia

↑ HbA_{1c}

= Normal Iron Study

↓mcv

Micro

HA
Hb
Hct

MCV

Fe

IB

Sideroblastic



Phollesman's

Trans

= Normal Iron Studies
Electrophoresis

↓ MCV

Chronic
any of
Pernicious
ESRD
...
FETTERIN

Sideroblastic

~~Alcohol /
Lead /
ANTH~~

↑ Fe

Russell Blue

Pyridoxine
ALA

Thalassemia

TRAIT

= Normal Iron Studies
Electrophoresis

B

↑ loss

↓ mcr

Iron

1 mg/day

~~NOT 5-6 mg/day~~

max 4 mg/day

IRON

↓ Fe

Chronic

Sideroblastic

~~Alcohol~~
~~Lead~~

Phthalocyanine

Trans

= Normal Iron

Electron

↑ Fe

Prussian Blue

Pyridoxine
ALA

KAPLAN MEDICAL

SS

IOA

1 Day

6 mg/day

4 mg/day

↓ MCV

Chronic

Sideroblastic

~~Alcohol~~
~~Lead~~

Thalassemia

Tf sat

Normal Iron St

Electrophoresis

2

↑ Tc

Russian Ship

Idoxine

A

(GI) ↑ Loss

↓ MCV

need

IRON

1 mg/day

Pregnant 5-6 mg/day
Absorb max 4 mg/day

Chronic

Any RA

→ ~~ESRD~~

0000

✓ Ferriitin

↑ Ferriitin

↓ Fe

↓ Fe

↑ TIBC

↓ TIBC

KAPLAN MEDICAL

(GI) (Loss)

Need

Iron

1 mg/day

Pregnant 5-6 mg/day

Absorb max 4 mg

✓ Normal

↓ Fe

IM
IRON

→ ↑ TIBC

Mass

Replac

↓ MCV

Chronic

RA
Cancer
SRD

Sideroblastic

~~Alcohol~~
~~Lead~~

↑ Fe

PRUSSIAN BLUE

Pyridoxine
ALA

KAPLAN MEDICAL

↓ MCV

Chronic

any RA
Cancer
ND

000
TITIN/

↓ TITIN/

Sideroblastic

~~NO~~
~~4, 5, 6, 7~~

Thalassemia

TRAIT

Normal Iron Studies

Electrophoresis

↓

B

A

GI ↑loss

↓MCR

Iron

1mg/Day

6mg/Day

4mg/Day

Chronic

Any RA

Causes
ESRD

0000

↑FERRITIN

↓Fe

↓TIBC

1/3 NO

J.M.

IRON

Si

AL

LA

↑

PIUS

Pyridox

AL

KAPLAN MEDICAL

GI ↑loss

↓MCR

IRON

1mg/day

test result 5-6 mg/day
max 4mg/day

Chronic
Any RBC
↓ ESRD

Sideroblast

~~Also no lead~~

↑ferritin

↑ferritin

↓Fe

↓Fe

↑TIBC

↓TIBC

↑Fe

Prussian Blue

Marrow

replace

Pyridoxine
ALA

I Loss
 Iron
1mg/Day
 5-6mg/Day
 max 4mg/Day
Iron
 ↓ Fe
 ↑ TIR
 narrow
 Replace

↓ MCV
 Chronic
 Any R
 Low
 ES R
 0000
 ↑ FETIC

Sideroblastic
~~Alcohol~~
~~Leads to~~

Thalassemia
 Transf
 Normal
 Electro

$$A = 2\alpha +$$

Loss

Iron

mg/day

5-6 mg/day

max 4 mg/day

IRON

Life

3-5

10

15

20

25

30

35

40

↓ MCV

Anemic

Sideroblastic

~~Alcohol~~
~~Lead~~

↑ Fe

Russell Blue

Oxidation

LA

Pholaserin

Trans

Normal Iron

Electrophoresis

↓

∞

$$A = 2\alpha + 2\beta$$

Loss

Iron

mg/day

5-6 mg/day

max 4 mg/day

AIN

Life

mg/day

mg/day

mg/day

mg/day

mg/day

mg/day

mg/day

mg/day

↓ MCV

Chronic

AIN

AIN

AIN

AIN

AIN

AIN

AIN

AIN

AIN

AIN

AIN

AIN

AIN

Sideroblastic

~~Alcohol~~
~~Lead~~

↑ Tc

RUSSIAN DVA

Pyradoxine

ALA

Thalassemia

Trait

Normal Iron

Electrophoresis

2

$$A = 2\alpha + 2\beta$$

↓ MCV

Sideroblastic

Alcohol
Le

Thalassemia

TRAIT
Normal Iron Studies
Electrophoresis

$$A = 2\alpha + 2\beta$$

$$A_2 = 2\alpha +$$

B

↓ MCV

Chronic

Any RA
Cancer
SND

000

000000

000

000

Sideroblastic

A

Thalassemia

TRAIT

Normal Iron Studies

Electrophoresis

↓

B

$$A = 2\alpha + 2\beta$$

$$A_2 = 2\alpha + 2\beta$$

$$= 2\alpha$$

↓ MCV

Chronic

Any of

Fe deficiency

0000

↑ Ferritin

↓ TIBC

↓ TIBC

Sideroblastic

Thalassemia

Trans

Normal Iron Studies

Electrophoresis

$$A = 2\alpha + 2\beta$$

$$A_2 = 2\alpha + 2\Delta$$

$$F = 2\alpha + 2$$

↓ MCV

Chronic

Any ~~all~~ ~~cause~~
- ~~is not~~

DOOO

↑ Ferritin

↓ Fe

↓ TIBC

Sideroblastic

~~ALCOHOL~~
~~CAUSATION~~

Thalassemia

TEST

Iron Studies

Erythropoiesis

KAPLAN MEDICAL

Sideroblastic

~~Alc to lead~~

Thalassemia

Trait

Normal Iron Studies

Electrophoresis

$$A = 2\alpha + 2\beta$$

$$A_2 = 2\alpha + 2\delta$$

$$F = 2\alpha + 2\gamma$$

KAPLAN MEDICAL

Sideroblastic

~~Alc (no)~~
~~Leu (NH)~~

Tc

SSAN Blue

Tidoxine
LA

Tholosen's

Trans
Normal Iron Studies
Electrophoresis

Flg
HCT

$$A = 2\alpha + 2B$$

$$A_2 = 2\alpha + 2\Delta$$

$$F = 2\alpha + 2G$$

Thalesen's

Trans

Normal Trans Studies

Electrophoresis



$$A = 2\alpha + 2\beta$$

$$A_2 = 2\alpha + 2\beta$$

$$F = 2\alpha + 2\beta$$

Normal Normal

Pholosen's

Trail

Normal Iron Studies

Electrophoresis

$$A = 2\alpha + 2\beta$$

$$A_2 = 2\alpha + 2\text{Delta}$$

$$F = 2\alpha + 2\text{Gamma}$$

HLG
HCT

Thalesen's

Flg
HCT

TRAIT
NORMAL Iron Studies
Elongation of red cells

$$A = 2\alpha + 2\beta$$

$$A_2 = 2\alpha + \alpha$$

$$F = 2\alpha + 2\beta_{\text{normal}}$$

Phosphenia

Trans

Normalised Shading

Electrophysiology

Flg
HET

$$A = 2\alpha + 2B$$

$$A_2 = 2\alpha + 2\Delta$$

$$F = 2\alpha + 2\sigma$$

Thalassemia

TRAIT
Normal Iron Studies
Electrophoresis

$$A = 2\alpha + 2\beta \downarrow A$$

$$A_2 = 2\alpha + 2\Delta$$

$$F = 2\alpha + 2\gamma$$

HCT

KAPLAN MEDICAL

Thalassemia

TRAIT

Normal Iron Studies

Erythropoiesis

Hb
Hct

$$A = 2\alpha + 2\beta \downarrow A$$

$$A_2 = 2\alpha + 2\beta \uparrow A$$

$$F = 2\alpha + 2\gamma$$

RAFLINK MEDICAL

Pholosen's

Trans

Normal Trans

Electrophoresis

FLS
RET

$$A = 2\alpha + 2B \downarrow A$$

$$A_2 = 2\alpha + 2\text{Delta} \uparrow A_2$$

$$F = 2\alpha + 2\text{Gamma} \uparrow F$$

metabolism

~~100% 100%~~
~~100% 100%~~

100%

STANBUP

AKINOP
A

$\downarrow A$ $\uparrow A_2$ $\uparrow F$ = $\begin{pmatrix} H_2 \\ HET \end{pmatrix}$

\uparrow \uparrow \uparrow
Normalizing Studies
Electrophoresis

α

$$A = 2\alpha + 2B \quad \downarrow A$$
$$A_2 = 2\alpha + 2\Delta \quad \uparrow A_2$$
$$F = 2\alpha + 2\Gamma \quad \uparrow F$$

↓ MCV

Chronic

Any of
Cancers
RD

Sideroblastic

~~Alcohol~~
~~Ca²⁺~~
~~INH~~

↓ A ↑ A₂ ↑ F₁ = HUS
Thalassemia

↑ α₁
Normal Iron Studies
Electrophoresis

A = 2α + 2β ↓ A

A₂ = 2α + 2Δ ↑ A

F = 2α + 2γ ↑ F

KAPLAN MEDICAL

↓ MCV

Chronic

Any RA

ESRD

0000

↑ Ferritin

Sideroblastic

~~Alcohol~~
~~Lead~~

↑ Fe

ANKS

XIN

↓ A ↑ A₂ ↑ F = FLS
Thalassemia

Trans
Normal Iron Studies
Electrophoresis

↓ A = 2α + 2β ↓ A
↓ A₂ = 2α + 2δ ↑ A
↓ F = 2α + 2γ ↑ F

KAPLAN MEDICAL

↓ MCV

Chronic

Anx

↑ Ferr

Sideroblastic

~~Alcohol~~
~~Lead~~
~~Ant~~

↑ TIBC

PISS/ANK

↓ A ↑ A₂ ↑ F = (TIBC / Ferr)

Thalassemia
Treat
Normal Iron Studies
Electrophoresis

↓ A = 2α + 2β ↓
↓ A₂ = 2α + 2δ ↑
↓ F = 2α + 2γ ↑

KAPLAN MEDICAL

↓ mcv

Chowit

Sideroblastic

~~Also no
Leads, etc.~~

$$\downarrow A \quad \uparrow A_2 \quad \uparrow F_1 = \text{CFL}$$

Pholcseni's

Trans
Normal Iron Study

Electrophoresis

 ~~$A = 2\alpha + 2\beta$~~ ↓
$$\downarrow A_2 = 2\alpha + 2\Delta T_a \uparrow$$
$$\downarrow F = 2\alpha + 2\gamma_{\text{ann}} \uparrow$$

KAPLAN MEDICAL

↓ MCV

Sideroblastic

~~Alcohol~~
~~Lead~~

↓ A ↑ A₂ ↑ F₁ = PLS
Pholsemis
PET

Trans
Normal Iron Studies
Electrophoresis

$$\begin{aligned} \downarrow A &= 2\alpha + 2\beta \quad \downarrow A \\ \downarrow A_2 &= 2\alpha + 2\text{Delta} \quad \uparrow A_2 \\ \downarrow F &= 2\alpha + 2\text{Gamma} \quad \uparrow F \end{aligned}$$

↓ MCV

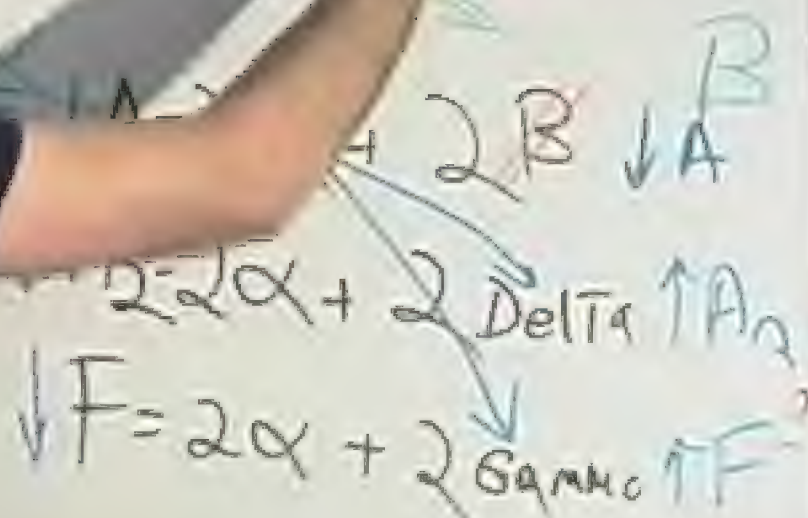
Chronic
IDA
Low RDW
RDW

Sideroblastic

~~HO~~
~~Delta~~

1
2
3

α



KAPLAN MEDICAL

↓ MCV

Chronic

Any ~~for~~

Causes

→ ~~SSRD~~

oooo

↑ Ferritin

Sideroblastic

~~Alcohol~~

~~Lead~~



$A = 2\alpha + 2\beta$ ↓ A
 $A_2 = 2\alpha + 2\text{Delta}$ ↑ A
 $F = 2\alpha + 2\text{Gamma}$ ↑

KAPLAN MEDICAL

↑ Hct
↑ Hb

↓ MCV

Anemia

hypochromic
microcytic

oooo

Ferritin

↑

↑

Sideroblast

~~Alcohol~~
~~lead~~

7/10/20

2

3

4

$\Delta A = 2\alpha$

$\Delta A = 2\alpha +$

$\Delta F = 2\alpha -$

↓ MCV

Anemic

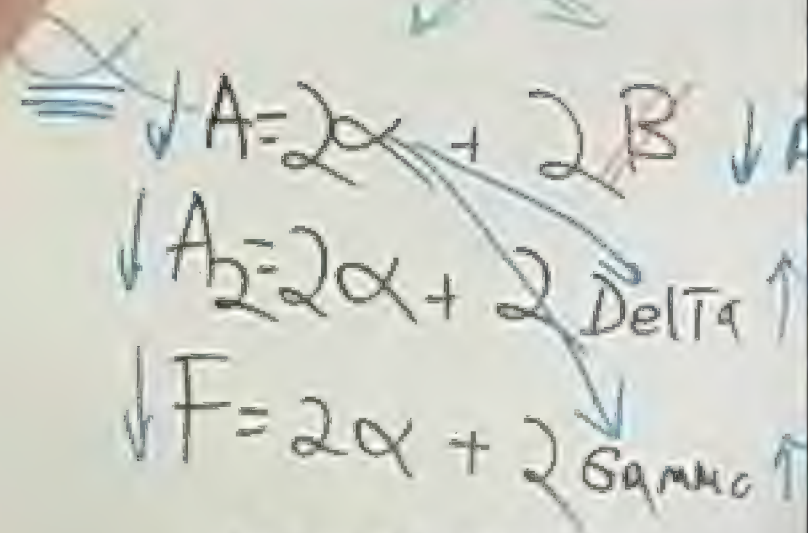
Sideroblastic

~~Alcohol~~
~~Lead~~

~~Normal~~



recycling



↓ MCV

Chronic

Any

Sideroblastic

~~Alcohol~~
~~Lead~~

~~Sideroblastic~~

2 → α
3 → α
4 → α

electrolytes

↓ $A = 2\alpha + 2\beta$ ↓
↓ $A_2 = 2\alpha + 2\text{Delta}$ ↑
↓ $F = 2\alpha + 2\text{Gamma}$ ↑

KAPLAN MEDICAL

↓ MCV

Chronic

Any

5000

↑ Ferritin

Sideroblastic

~~Alcohol~~
~~Lead~~

Silent ~~WBC~~

2 → α
3 → α
4 → α

↓ EEC / γ globulin

↓ A = 2α + 2β ↓ A
↓ A₂ = 2α + 2 Delta ↑ A₂
↓ F = 2α + 2 Gamma ↑ F

KAPLAN MEDICAL

(GI) (Loss)

↓ MCV

Silent?

need

Iron

Chronic

Any pt

Cancer

ESRD

2000

Sideroblastic

~~Alcohol~~
~~Lead~~

Pres
Absorption

↓

↑ Ferritin

↓ A

↓ A

↓ F

KAPLAN MEDICAL

GI, Loss

↓ MCV

need Iron

1mg/day

Prescribe 5-6mg/day,
sorts max 4mg/day

↓ Ferritin

↓ Fe

Chronic

Any ~~of~~

~~Chronic~~
~~ESRD~~

0000

↑ Ferritin

↓ Fe

↓ TIBC

(GI) (Loss)

Need

Iron

1

Pregnant

Absorbs

(Vitamin)

Normal

↓ MCV

Chronic

Any RA

Cancer

→ ~~ESRD~~

oooo

↑ Ferritin

↓ Fe

↓ B12

Sideroblastic

~~Alcohol~~
~~Lead~~
~~INH~~

Silent Mild

Moderate

Dead

≡ ↓ A=

↓ A₂=

↓ F=

KAPLAN MEDICAL

(GI) ↑Loss

Need

Iron

(1mg/day)

Pregnant 3-6mg

Absorbs max

(Vitamin C)

(3 Normal)

(Iron)

(IBS)

(Marrow)

Replace

Chronic

Any RA

Calcium

ESRD

↑ Ferritin

↓ Fe

↓ TIBC

GI \rightarrow \uparrow loss

Need

Iron

1mg/day

Prescribe 5-6mg/day

Absorb max 4mg/day

\downarrow Feritin

Chronic

\downarrow Fe

$\rightarrow \uparrow$ TIBC

Chronic

Any RA

\rightarrow ~~ESRD~~

0000

\uparrow Feritin

\downarrow Fe

\downarrow TIBC

\downarrow MCV

Sideroblastic

~~Alcohol~~
~~Lead~~

Side
mi
med

↓ MCV

Chronic

Sideroblastic

~~Alcohol~~
~~Lead~~

Silent ~~Wasting~~ Normal

Mild 2

Moderate 3

Dead

Electrolyte

↓ $A = 2\alpha + 2\beta$ ↓ A

$A_2 = 2\alpha + 2\Delta$ $\uparrow A_2$

$\downarrow F = 2\alpha + 2\gamma$ $\uparrow F$

GI Loss

↓ MCV

Silent ~~Wasting~~
Mild 2 →

Sideroblastic Moderate 3 →

Dead 4 →
check

~~Alcohol~~
~~Lead~~
~~Drug~~

Chronic
Any RA
Causes
ESRD

...
Fertilization

need

Iron

1 mg

Presumptive

Absorb Max

↓ ~~transferrin~~

Normal

↓ F

GI ↑loss

↓MCV

Silent WMA
mild 2

need

Iron

1mg/day

Prescription 5-6mg

Absorb Max 4mg

Chronic

by RA
Cancer
SND

Sideroblastic

Moderate 3

~~Alcohol~~
~~Lead~~

Dead 4

↓Iron

3 Normal

↓Fe

1M
IRON

→ ↑TIBC

Max

Req

↓A=2

↓A₂=2

↓F=2

(GI) (Loss)

↓ MCV

Silent W/O
mild

Need

Iron

(1mg/day)

Pregnant 5-6mg/day
Absorb max 4mg/day

Sideroblastic

Moderate

~~Alcohol~~
~~Lead~~

Dead

(V) (Normal)

↓ Ferritin

↓ Fe

(J.M.)
(Iron)

≡ ↓ A=2

↓ A₂=2

↓ F=2

KAPLAN MEDICAL

BT 1 loss

↓ MCV

Silent ~~Wob~~
mild 2

Need Iron

Chronic

Sideroblastic

moderate 3

1 mg/day

Prescribed

Absorb

~~Alcohol~~
~~Ca~~

~~Dead~~

Vitamin

Shono

M
ou

$\downarrow A = 2\alpha$

$\downarrow A_2 = 2\alpha$

$\downarrow F = 2\alpha$

BT Loss

Iron
Ino
regiment 5
or 6 max

Acidosis
↓ F

↓ T

Max

Ref.

↓ mcv

Chronic
Any RA
P₅₀ ↑
ESRD

Sideroblastic

~~Micro~~
~~Macro~~

Silent Wobbling Norm
Mild 2 → α

Moderate 3 → α

Dead

↓ lec / pyrimidine

↓ $A = 2\alpha + 2B$

↓ $A_2 = 2\alpha + 2\Delta T$

↓ $F = 2\alpha + 2G_{an}$

KAPLAN MEDICAL

78 ♂ Office

KAPLAN MEDICAL

78 ♂ Office
Tinsling/Numbers,
of +lands/feet

78 ♂ Office
Tingling/numbness
of hands/feet
Alcoholic

78 ♂ Office
Tingling/numbness
of hands/feet
Alcoholic
HCT 30
M CV

78 ♂
Tins/no/M
of +lan
Alcohol
HCT:
M CV: 1

KAPLAN MEDICAL

78 ♂ Office
Tinsling/Numbness
of hands/feet
Alcoholic
HCT: 30
MCV: 110
Smear.

B12

78 ♂ Affected
Tingling/numb
of hands/feet
Alcoholic
HCT: 30
MCV: 110
Smear:

B12

78 ♂ Office
Tingling/numbness
of hands/feet

Alcoholic

HCT: 30

MCV: 110

Smear:

Hypersegmented

B12

78
Tinslin
of +
Alco
HC
M CV
Sme
+

KAPLAN MEDICAL

B12

78
Tinslin
of +
Alco
HC
M CV
Sme
+

B12

78
Tinslin
of +
Alco
HC
M CV
Sme
+



KAPLAN MEDICAL

B12

78 ♂ Office
Tingling/numbness
of hands/feet
Alcoholic
HCT: 30
MCV: 110
Smear
hypersegmented

B12

78 ♂ of
Tinsling/NUN
of +lands
Alcoholic
HCT: 30
M CV: 118
Smear:
hypose

B12

78 ♂ Office
Tinsling/Number
of +lands/fe

Alcoholic

HCT: 30

M CV: 110

Smear:

Hypersegment

B12

Neuro:

78 ♂ of Fin
Tinsling/Nump
of +lands/f
Alcoholic
HCT: 30
MCV: 110
Smear:
Hyperseg

B12

Neuro:
Peripheral

78 ♂

Insulin/
of + lab

Alcohol

HCT:

M CV:

Smear
Hyp

B12

Neuro:
→ peripheral

78 ♂
Insulinol/
of + 1 an
Alcohol
HCT:
M CV:
Smear:
Hypo

KAPLAN MEDICAL

B12

Neuro:
→ peripheral

78 ♂ AfF
Tinsling/NUM
of +lands/
Alcoholic
HCT: 30
MCV: 110
Smear:
hyper-se

B12

Neuro:
→ peripheral

78 d
Tingling
of +1
Alco
HCT
M CV
Sme
+1

B12

Neuro:
→ peripheral

78 ♂

Insulin/N
of +1 and

Alcohol

HCT: 3

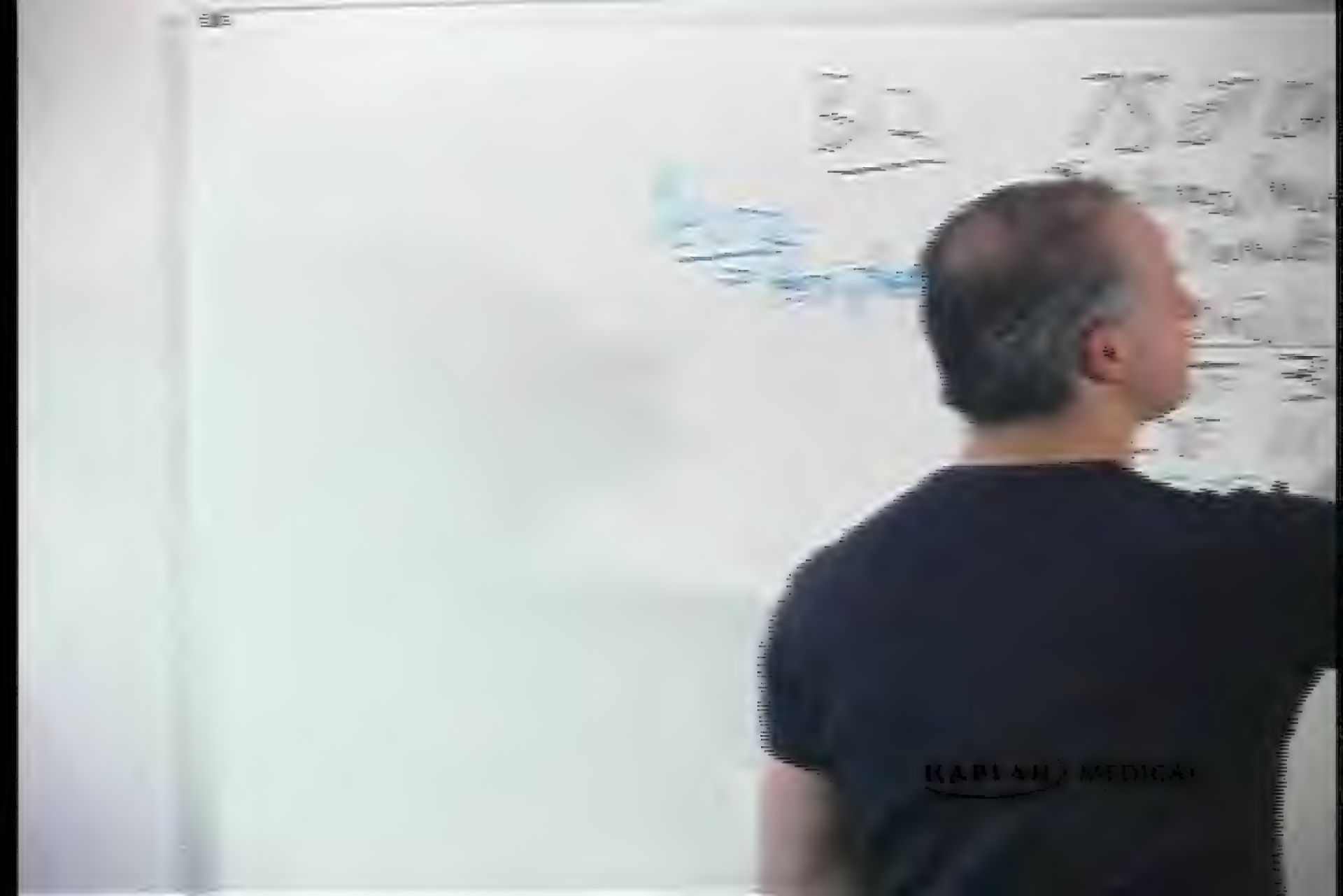
M CV: 1

Smear:
hyper

B12

Neuro:
→ peripheral

78
Tins
of
A
+
M
S



KAPLAN MEDICAL

B12

78 ♂ Office
Tingling/Numbness
of hands/feet
Alcoholic

Folate

No Neu

T: 30
M V: 110

near:
hypersegmented

B12

Neuro:
→ peripheral

78 ♂ Office
Tingling/Numbness
of hands/feet

No

Alcoholic

HCT: 30

MCV: 110

Smear:

Hypersegmented
>4 hypes

B12

peripheral

78 ♂ Office
Tingling/numbness
of hands/feet

Alcoholic

HCT: 30

MCV: 110

Smear

Hypersegmented
>4 segments

Folate

No Neuro

Level

B12

78 ♂ Office

Folate

Neuro:

→ peripheral

Level

muscles/nerves
tongue/feet

scholic

ST: 30

EV: 110

No Neuro

Level

Replace

B12

Neuro:
→ peripheral
Love!

78 ♂ Office
Tingling/numbness
of hands/feet

Alcoholic

HCT: 30

M CV: 110

Smear:

Hypersegmented
>4 filar segments

No
Low
Free

B12

eg:
Peripheral
Love!

78 ♂ Office
Tingling/numbness
of hands/feet
Alcoholic
HCT: 30
MCV: 110
Smear:
Hypersegmented
>4 A

B12

Neuro:
→ peripheral
Love!

78 ♂ African
Insulin/Number
of +lands/feet
Alcoholic
HCT: 30
MCV: 110

B12

78 ♂ Office

Folate ↓ Intake

Neuro:

Tingling/Numbness
of hands/feet

No Neuro

Sickle cell

→ Ferri

Low

Alcoholic

HCT: 30

CV: 110

Low

Reple

B12

Neuro:
→ peripheral
Love!

78 ♂ Office
Tingling/numbness
of hands/feet
Alcoholic
HCT: 30
MCV: 110

Smear:
Hyposegmented
>4 anisocytosis

Fol

No Ne
Love!
Replac

B12

78 ♂ Office

Folate ↓ Intake

Tingling/Numbness
of hands/feet

No Neuro Sickly

Alcoholic

HCT: 30

MCV: 110

Low

Replace

Smear

Hypersegmentation
>4 hyperseg

B12

78 ♂ Office
Tingling/Numbness
of hands/feet

Alcoholic

HCT: 30

M CV: 110

Smear:
Hyposegmented
>4 Anisocytosis

Folate ↓

No Neuro Signs

Level

Replace

B12

78 ♂ Office

Folate

Neuro:

seri
Love

limbs/numbness
+ hands/feet

alcoholic

CT: 30

CV: 110

No

Low

16 Cup

B12

Neuro:
→ peripheral
Love!

78 ♂ Office
Tingling/Numbness
of hands/feet
Alcoholic

HCT: 30
M.C.V: 110

Smear:
Hyposegmented
> 4 Anis

B12

Neuro:

= peripheral

Love!

1 Methylmalonic
ACID

78 ♂ Office
Tingling/numbness
of hands/feet

Alcoholic

HCT: 30

MCV: 110

Smear:

hypersegmented
>4 hyperseg

B12

Neuro:
→ peripheral

Low

↑ methylmalonic
acid
level

78 ♂ Office
Tinsling/numbness
of hands/feet

Alcoholic

HCT: 30

M CV: 110

Smear:

hypersegmented
>4 AHA

B12

Neuro:
→ peripheral

Level

Methylmalonic
Acid
level

78070

Tingling/numb
of +/hand

Alcohol

HCT: 3

M CV: 11

Smear:
hyper

B12

Neuro:

= peripheral

Low

↑ Meth

low

↑

level

78 ♂ Office

Insulin/Numbr
of +lands/fe

Alcoholic

HCT: 30

M CV: 110

Smear:

Hypersegment
>4

B12

Neuro:
= peripheral

Level

↑ Methylmalonic
Acid
level

78 ♂
Tinsling
of +1a
Alcohol
HCT:
M CV:
Smea
Hx

B12

78 ♂

Neuro:

= peripheral

Low

↑↑ Methy

Level

slimo/

+lan

Alcohol

HCT:

M CV:

Smear:

Hypo

B12

Neuro:

= peripheral

Low

↑↑ Methylmalonic
Acid

Low
Roplaro

Schilling

78 ♂ Office
Tingling/numbness
of hands/feet

Alcoholic

HCT: 30

M CV: 110

Smear:

Hypersegmented
>4 Abrasion

B12

78 ♂ Office
Tingling/numbness
of hands/feet

Alcoholic

HCT: 30

M CV: 110

Smear

Hypersegmented
>4 hyperseg

ANTI-INTRINSIC FACTOR

KAPLAN MEDICAL

B12

Neuro:

→ peripheral

Lowel

↑↑ Methylmalonic
Acid

Lowel
Roplace

Schilling's - Anti-Intrinsic Factor
Anti-Parietal Cells

78 ♂ Office
Tinsling/Number
of Hands/feet

Alcoholic

HCT: 30

M CV: 110

Smear:

Hypersplenomegaly
> 4 RBC

B12

Neuro:
→ peripheral

Low

→ Methylmalonic
Acid

Low
→ proliferation

→ Anti-Intrinsic Factor
→ Anti-Parietal Cells

78 ♂ Office
Tingling/Numbness
of hands/feet
Alcoholic

HCT: 30

M CV: 110

Smear:
hypersegmented
>4 segments

B12

Neuro:

= Peripheral

Level

↑↑ Methylmalonic
Acid

Level
Rapido

Schilling

Anti-Intrinsic Factor
Anti-Parietal Cells

78 ♂ Office

Tingling/numbness
of hands/feet

Alcoholic

HCT: 30

MCV: 110

Smear:

Hypersegmented
> 4 per HPF

B12

Neuro:

= peripheral

Love!

Methylmalonic
Acid

↑↑↑↑
Ruopla

~~Schloss~~

ANTI INTRINSIC FACTOR
ANTI PAROXYAL CELLS

78 ♂ Office

Tingling/Numbness
of hands/feet

Alcoholic

HCT: 30

M CV: 110

Smear:

Hypersegmentation
↑ > 4 hypoglyc

B12

Neuro:
= peripheral

Level

↑↑ Methylmalonic
Acid

Level
Replace

~~Schilling's~~

Anti Intrinsic Factor
Anti Parietal Cells

78 ♂ Affected
Insulin/NUMP
of hands/f
Alcoholic

HCT: 30
MCV: 110
Smear:
Hyposeg
>4

B12

Neuro:
= peripheral

Level

1-Methylmalonic
Acid

Level
Replaced

~~Antib~~

Anti Intrinsic Factor
Anti Parietal Cells

78 ♂ Aff

Tingling/numb
of hands/feet

Alcoholic

HCT: 30

M CV: 110

Smear:

Hyperseg
>4

KAPLAN MEDICAL

B12

peripheral

Low

Thy/Malonic
acid

Low

78 ♂ Aff

Insulin/Num
of +lands

Alcoholic

HCT: 30

M CV: 110

Smear:

Hyperseg
>4

Intrinsic Factor

Perceptual Falls

B12

+/- Neuro.

Peripheral

Level

Metformin
Methylmalonic
Acid

Level
Radiation

~~Symptoms~~

Anti-Intrinsic Factor
Anti-Parietal Cells

78 ♂ Aff
Tinslingo/Number
of Hands/F

Alcoholic

HCT: 30

MCV: 110

Smear:

Hypersplen
>4



KAPLAN MEDICAL



KAPLAN MEDICAL



KAPLAN MEDICAL



KAPLAN MEDICAL



KAPLAN MEDICAL



KAPLAN MEDICAL



KAPLAN MEDICAL

hemodyns:

hemodyns:

hemodyns:

Hemolysis:
Acute

KAPLAN MEDICAL

Acute
Anemic

Analysis:

KAPLAN MEDICAL

Acute
Anemia — Loss = hemolysis

Hemolysis

Acute

Acute
Anemia — Loss = hemolysis

Acute
Anemia - GI Loss = hemol

Hemolysis:

Acute

→ Acute
ANEMIA — GI
Loss = hemol

Hemolysis:

Acute
MCV Normal
or slightly

→ Acute Anemia — GI Loss

Hemolysis:

Acute
Normal
or slightly
↑ ↑

KAPLAN MEDICAL

→ Acute Anemia — GI Loss

Hemolysis:

Acute
MCV Normal
or slightly
↑ ↑

KAPLAN MEDICAL

→ Acute
Anemia

— G
Los

↑ Reticulocytes

Hemolysis:

Acute

Chronic

→ Acute
Anemia — GI
Loss

→ Reticulocyte

Hemolysis

Acute
MCV low
or normal

→ ACUTE ANEMIA — GI LOSS =

Hemolysis → ↑ Reticulocyte
→ ↑ LDH
→ ↑ Bilirubin

ACUTE
NORMOCHROMIC
NORMOCYTIC
↑ ↑



KAPLAN MEDICAL

Hemolysis → ↑ Reticulocytes
→ ↑ LDH
→ ↑ Bilirubin
→ ↓ Haptoglobin

Acute

MCV Normal Int
or Slight
↑ ↑

↑ Reticulocyte
 ↑ LDH
 ↑ Bilirubin
 ↓ Haptoglobin
INTERVASCULAR
 ↑

Hemolysis
 Acute
MCV Normal
 or slightly ↑

hemolysis
Acute
m
erythrocytes
hemin
hemin

hemolysis
acute
MCV

KAPLAN MEDICAL



SICKLE CELL DISEASE

- ↑ Reticulocytes
- ↑ LDH
- ↑ Bilirubin
- ↓ Haptoglobin
- INTERVASCULAR COAGULATION

↑ TRE
↑ LD
↑ B
↑ ↑
↑ ↑



KAPLAN MEDICAL



MAPLAN MEDICAL



KAPLAN MEDICAL



KAPLAN MEDICAL

hemolysis
Acute
Molecular
Leucocytes
Bilirubin
Haptoglobin
Molecular

Hemolysis → ↑ Reticulocytes
 → ↑ LDH
 → ↑ Bilirubin
 → ↓ Haptoglobin
ACUTE
MCV NORMAL
OR SICKLE
 ↑ ↑
INTRAVASCULAR



Hemolysis → ↑ Reticulocytes
 → ↑ LDH
 → ↑ Bilirubin
 → ↓ Haptoglobin
 → INTRAVASCULAR →
URINODISK
MCV NORMAL
OR SKEWED
 ↑ ↑

Hemolysis → ↑ Reticulocytes
 → ↑ LDH
 → ↑ Bilirubin
 → ↓ Haptoglobin
 → INTERVASCULAR
 → URINODISK
 Hg

ACUTE
 ANEMIA
 OF SKELETAL
 ↑ ↑







↑ Reticulocyte

↑ LDH

↑ Bilirubin

Indirect

↓ Haptoglobin

Microvascular

Dark

KAPLAN MEDICAL



Neutrophils
Hemolysis
Acute
D+1
SILVIA
urine
Hemoglobin



Hemolysis → ↑ Reticulocyte
→ ↑ LDH
→ ↑ Bilirubin ^{Indirect} → URINO
↓ Haptoglobin
ACUTE
NORMAL
OR SLIGHT
↑ ↑
INTRAVASCULAR
URINO Dark
Hg



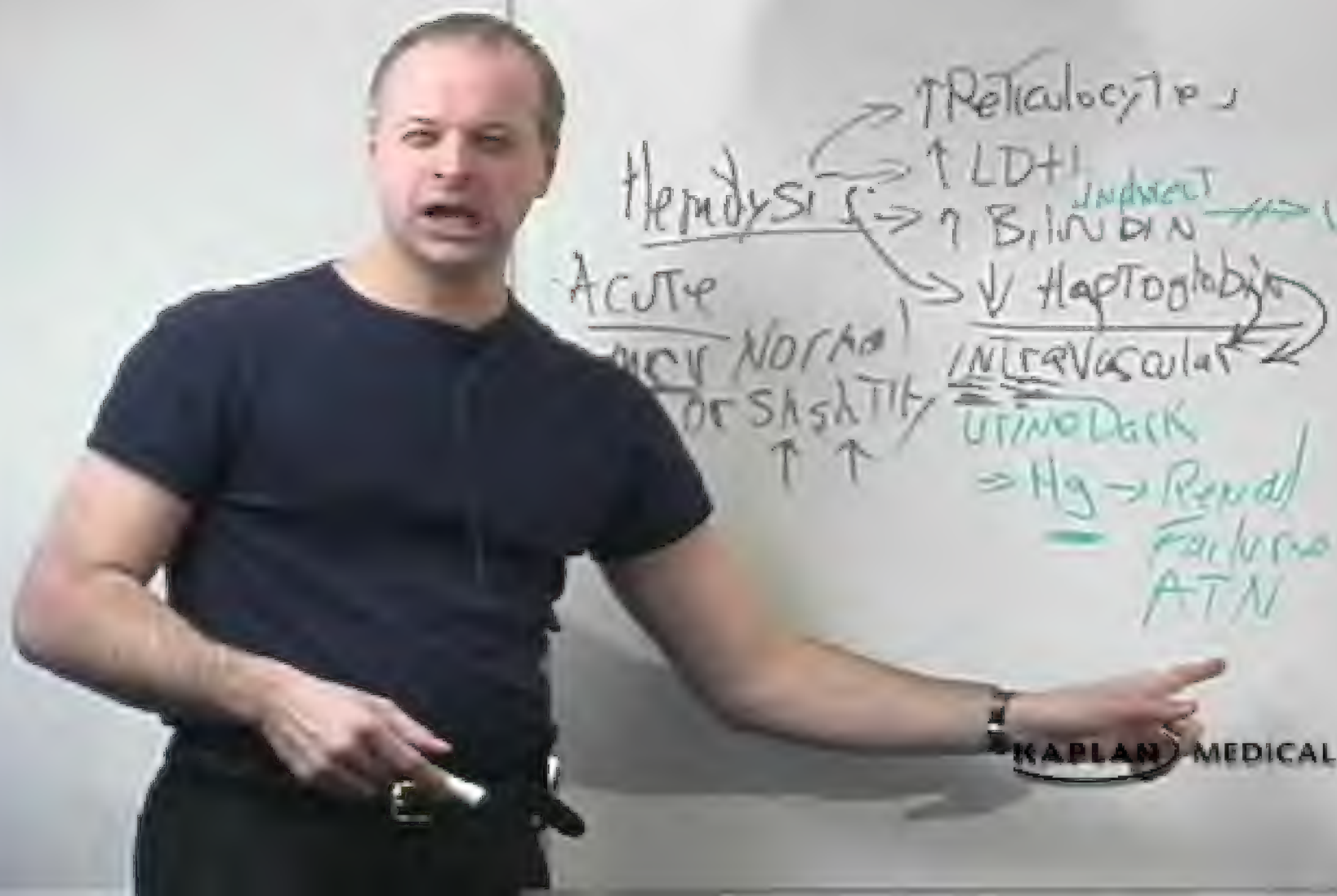
Hemolysis → ↑ Reticulocyte
 → ↑ LDH
 → ↑ Bilirubin → Urine
 Acute → ↓ Haptoglobin
 Normal or slightly ↑
 Intercourse → ↑ Hg → Good
 Folate
 FTH

Hemolysis → ↑ Reticulocyte
 → ↑ LDH
 → ↑ Bilirubin → Indirect → Urine
 → ↓ Haptoglobin
 Acute
 Normal
 Urine
 or SALT
 ↑ ↑
 INTERVASCULAR
 Urine Dark
 → Hg → Renal
 Failure
 ATN

Hemolysis → ↑ Reticulocytes
 → ↑ LDH
 → ↑ Bilirubin ^{Indirect} → Urine
 → ↓ Haptoglobin
 → INTERVASCULAR
 → URINODISK
 → Hg → Renal Failure
 → ATN

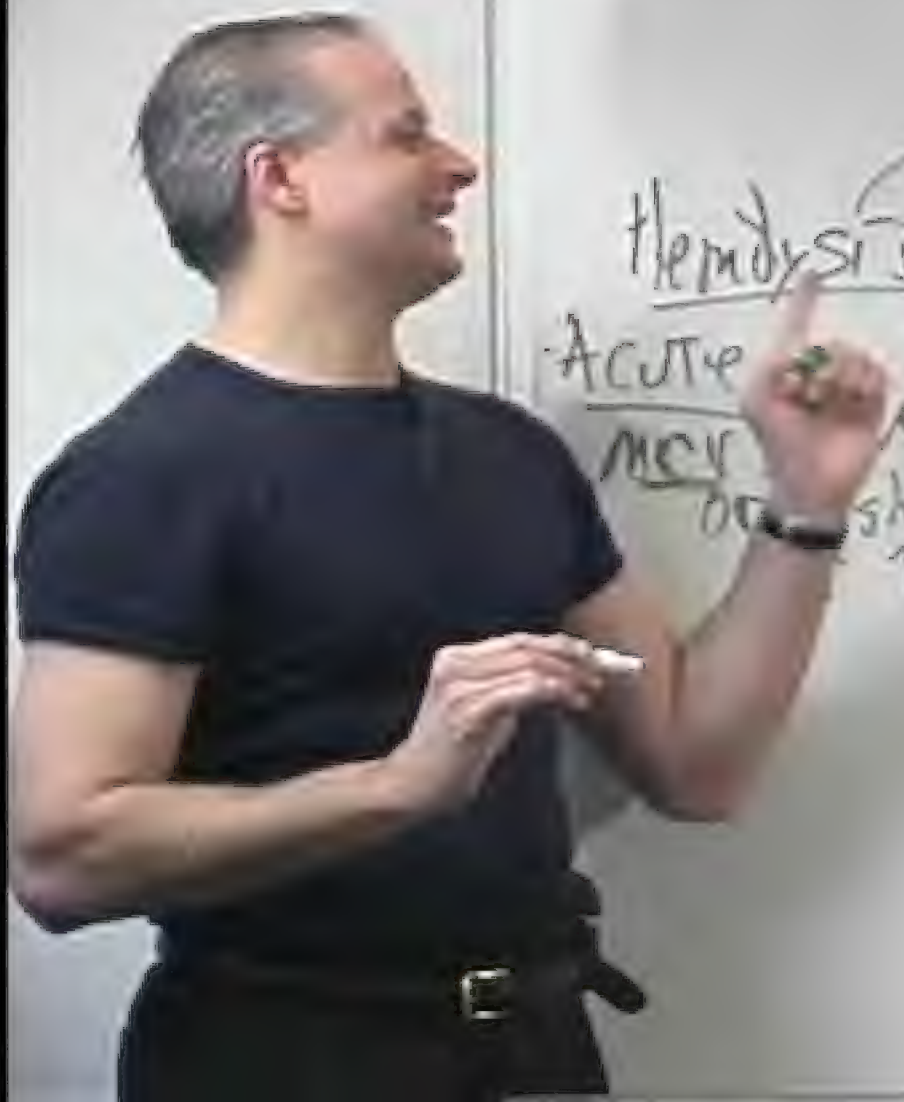
ACUTE
 MEV NORMAL
 OF SKELETON
 ↑ ↑





Hemolysis → ↑ Reticulocyte
→ ↑ LDH
→ ↑ Bilirubin → Indirect → URINE
ACUTE
NORMAL
DESHETIT
↑ ↑
Haptoglobin
↓
INTRAVASCULAR
URINOLACK
→ Hg → Renal Failure
ATN





Hemolysis → ↑ Reticulocyte
→ ↑ LDH
→ ↑ Bilirubin ^{Indirect} → Urine
→ ↓ Haptoglobin
Acute
MCV
Osmotic
↑
INTRAVASCULAR
URINODICK
→ Hg → Renal Failure
ATN
KAPLAN MEDICAL



↑ Reticulocytes

↑ LDH

↑ Bilirubin

Haptoglobin

Vascular

Dark

Renal Failure
ATN

KAPLAN MEDICAL

hemolysis
Acute
reticulocyte
D+ indirect bilirubin → ur
indirect bilirubin

Hemolysis → ↑ Reticulocytes
 → ↑ LDH
 → ↑ Bilirubin ^{Indirect}
 → ↓ Haptoglobin
 Acute
 Normal
 Slight
 ↑ ↑
 INTERVASCULAR
 URINOLYSIS
 → Hg → Renal Failure
 ATN



hemolysis → ↑ Reticulocytes
→ ↑ LDH
→ ↑ Bilirubin → ^{indirect} → Urine
→ ↓ Haptoglobin
NORMO
SPLANK
↑ ↑
INTERVASCULAR
URINODACK
→ Hg → Renal
Failure
ATN



KAPLAN MEDICAL





→ Autoimmune

Eulocyte,

DTI
Indirect
bilirubin

→ urine

Haptoglobin

→ Vascular

no Dark

Hg → Renal
Failure
ATN

→ Autoimmune



cytotoxic

Indirect
immun

Haptoglobin

→ Vascular

no back

Hg → Renal
Failure
ATN

the
st

urine

MANOVA



phagocytosis

NH

G6PD



KAPLAN MEDICAL



Hemolysis

Erythrocyte

LDH

BILIRUBIN

Haptoglobin

Scavenger

PK

Renal

Failure

ATN

→ Autoimmune

Hereditary
SPHEROCYTOSIS

→ PNH

→ G6PD



→ AUTOIMMUNE



Hereditary
SPHEROCYTOSIS

→ URINUM

→ PNH

→ G6PD

→ Autoimmune



Sickle Cell

→ Hereditary
Spherocytosis

PNH

→ Autoimmune

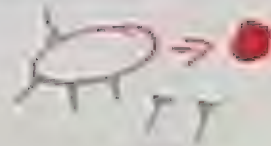


Sickle

Pharmac

KAPLAN MEDICAL

→ Autoimmune



→ Hereditary
Spherocytosis

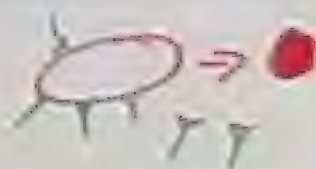
Sickle Cell
480 → ED Pain
Chest / Back

→ PNH

→ G6PD

KAPLAN MEDICAL

Autoimmune



Hereditary
Spheroc

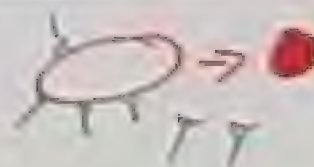
PNH

98%
99%
Sickle

Sickle Cell

4807 ED Pain
Chest / Back / Thigh

→ Autoimmunity



Sickle
98⁶
99%
Saturation
4807 E
Chest / Bo



Autoimmune

the SLE is

↑ Reticulocyte

↑ LDH

↑ B

↑ ANA

↑ ANA

↓ Hemoglobin

↑ Urinary protein

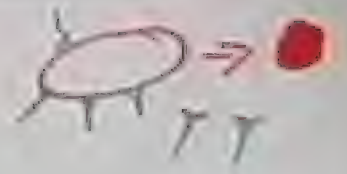
↑ Urinary casts

> Hematuria

SLE

↑ ANA
↑ ASATIT





→ Autoimmune

→ Hereditary,
Spherocytosis

→ ↑ Reticule
→ ↑ LDH
→ ↑ Bilirubin
→ ↓ Haptoglobin
Normal
Spherocytes
↑ ↑

2NH

PD

→ Autoimmune

→ Hereditary Spherocytosis

→ USING

? PH

G6PD

→ Hemolysis
→ ↑ Ret
→ ↑ LD
→ ↑ Bilirubin

Acute
MCV Normal
or slightly
↑

→ Autoimmune

Hereditary
Spherocytosis

→ urine

PNH

G6PD

↑ Retic
↑ LDH
↑ Bilirubin
↑ Urobilinogen

Hemolysis

Acute
MCV Normal
or Spherocytes
↑ ↑

→ Autoimmune



98%

99%

Saturation

Sickle Cell

4807 ED

Chest/Back

- Stomach

- Ulcers

- Osteo

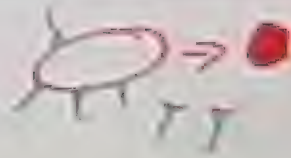
- Anemia

Hereditary
Spherocytosis

Path



7. Abt. 1. Mann



Sickle Cell

986

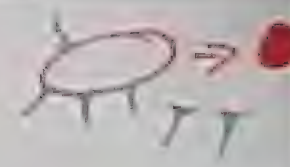
4807 ED Per

99%

Saturation (Post/Back IT)

- 57985

PTT C
CROSS



→ Autoimmune

→ Hereditary, Spherocytosis

USING

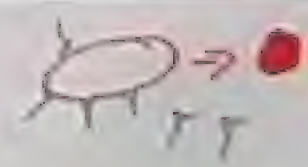
→ PNH

→ G6PD

→ Hemolysis → ↑ Reticulo → ↑ LDH → ↑ Bilirubin

Acute
MCV No
of

→ Autoimmune



98%
99%
Saturation

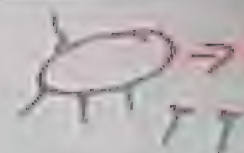
- Stones
- Ulcers
- Osteo
- APTIC Necrosis

→ Reticulocytosis
→ ↑ LDH
→ ↑ Bilirubin
→ ↓ Haptoglobin

Hereditary Spherocytosis

PNH

G6PD



→ Autoimmune

Hereditary
Spherocytosis

Hemolysis → ↑ Reticulocyte
→ ↑ LDH
→ ↑ Bilirubin
→ ↓ Haptoglobin

Acute

NOT NORMAL
OR SILENT
↑ ↑

INTERVASCULAR
UTERINE
= 1



→ Autoimmune

→ Hereditary,
Spherocytosis

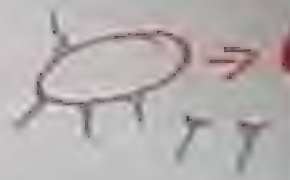
2N+1

PD

Hemolysis → ↑ Reticulocyte
→ ↑ LDH
→ ↑ Bilirubin
→ ↓ Haptoglobin
MCV Normal
or slightly
↑ ↑

INTER
U

→ Autoimmune



→ ↑ Reticulocyte
→ ↑ LDH
→ ↑ Bilirubin
→ ↓ Haptoglobin

Hereditary
Spherocytosis

PNH

Normal
Sphaktic
↑ ↑

INTERVEN
UTINO
→ Ha

→ G6PD

Immune



98⁶

99%

Saturation

Sickle Cell

4807 ED Pain

Chest / Back / Thigh

Dx

- Strokes

- Ulcers

- Osteo

- Apeptic
Necrosis

Hereditary
Spherocytosis

PNH

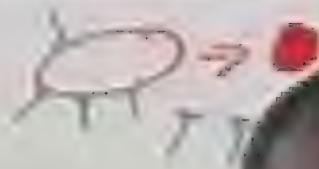
G6

Autoimmune

Hereditary
Spherocytosis

PNH

G6PD



Sickle Cell

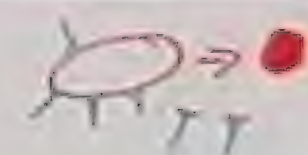
48 hr ED Pain

Chest / Back / Thigh

Dx

HEALPLAN MEDICAL

→ Autoimmune



Sick
98%
99%
Saturation
4807
Chest /
DX:

Etiology, Inc.

LDH

Indirect
Bilirubin

↓ Haptoglobin

Microvascular

Microscopic

→ Hy → RBCs

Fibrin

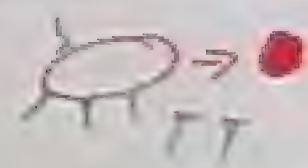
ATN

Hereditary
Spherocytosis

PNH

- Spikes
- Ovals
- Aged
- No CR

IMMUNE



Sickle Cell

98%
99%

4/5 07 ED Pain
Chest / Back / Thighs

Dx: Smear Schleier
Cells

red Tans
Phagocytosis

PNH

G6PD

IMMUNE



98%

99%

Saturation

- Stomach
- Ulcers
- Osteo
- Aseptic Necrosis

Sickle Cell

4807 ED Pain

Chest / Back / Thighs

Dx Smear Schlier
Gull's

Fluids / O₂ | Pain
mods



→ Autoimmune

Hereditary,
Spherocytosis

→ Urine

PNH

G6PD

KAPLAN MEDICAL

↑ Retia
↑ LDH
→ ↑ Bilirubin
→ Urine
Acute
MCV Normal
or slightly
↑

Hemolysis



Sickle Cell

98%

4/5 of ED Pain

99%

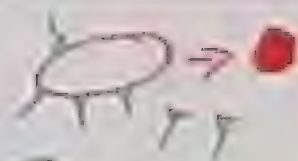
Chest / Back / Thighs

Locations

Dx Smear Schlicker
Cells

Fluids/O₂ / Pain
mods

→ Autoimmune



Hereditary
Spherocytosis

→ urine

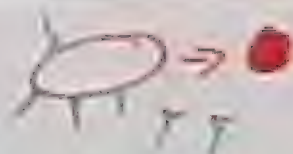
→ PNH

→ GO

Sickle Cell
98%
99%
Saturation
Chest/Back
Dx Smear
Fluids/O₂
Pw
m

- Spleen
- Ulcers
- Osteo
- Septic
- Crisis

→ Autoimmune



Hereditary
STPhe

Direct
ON
Tooth
Gum
Back
Recessed
Femur
ATN

98%
99%
Saturation
- Stasis
- Ulcers
- Osteo
- Aseptic
Necrosis

Sickle C

4807 ED

Phos / Back

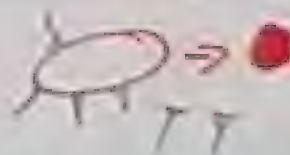
Dx Smear

Fluids / D₂

Trait

Adrenal SNAAT

→ Autoimmune



Sick
98%
99%
Saturation
4807
Phosi
Dx S
Fluids

- Stomach
- Ulcers
- Osteo

- Apoptotic
Necrosis

Trait

- Normal Sweat
- Normal CBC

Autoimmune
Thrombocytopenia

PNH

G6PD

Etiology

LDH

Bilirubin

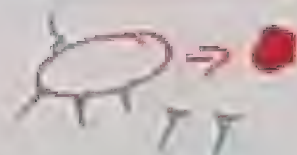
Haptoglobin

Transferrin

Dark

Hg

→ Autoimmune



Sic
98%
99%
480

Saturation Phos

- Sepsis

- Ulcers

- Osteo

- Apoptotic
Necrosis

Fluids

Treat

renal Sreat

renal CBC

by P

Hereditary
Spherocytosis

PNH

Reticulocyte

LDH

Bilirubin

↓ Haptoglobin

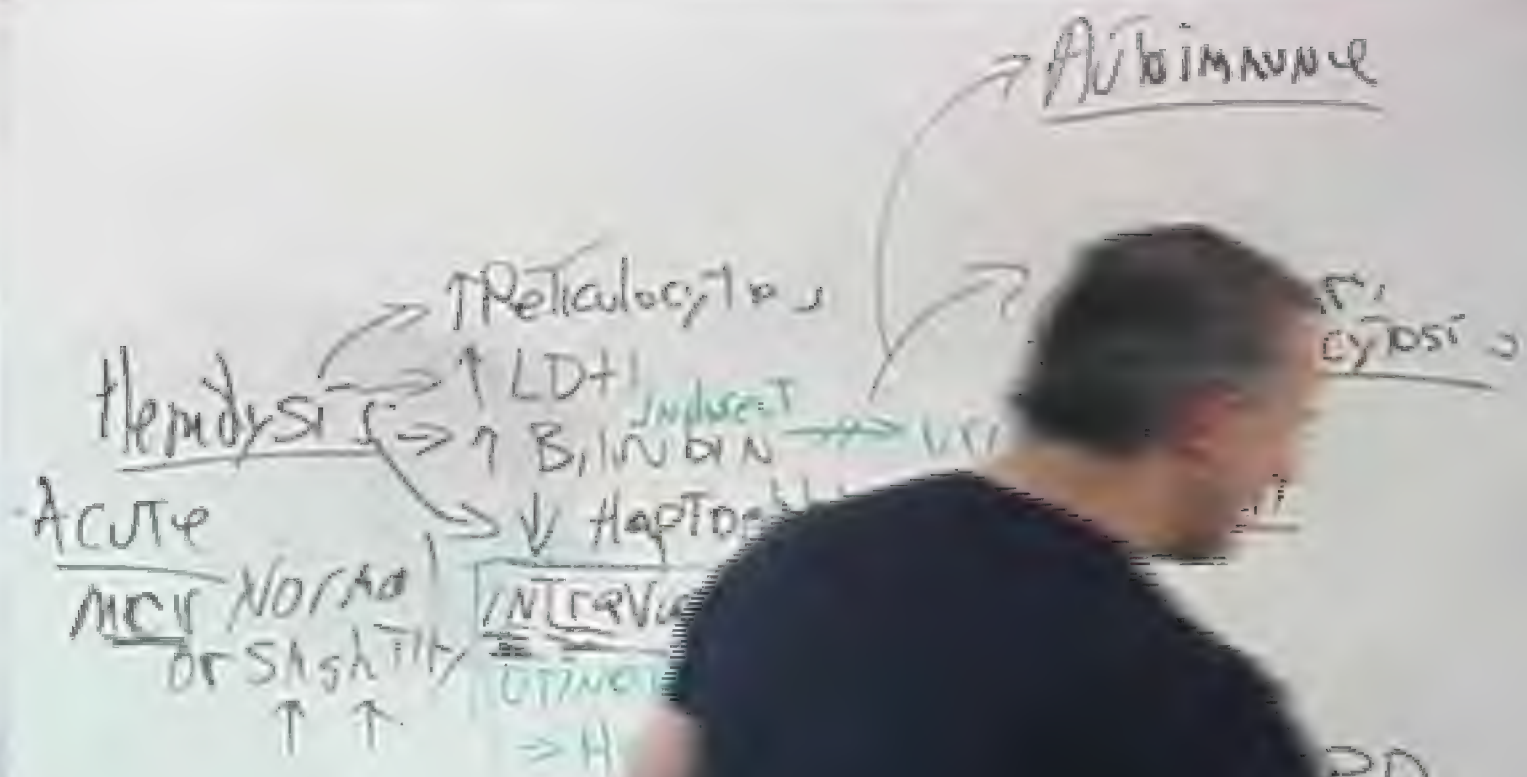
Intravascular

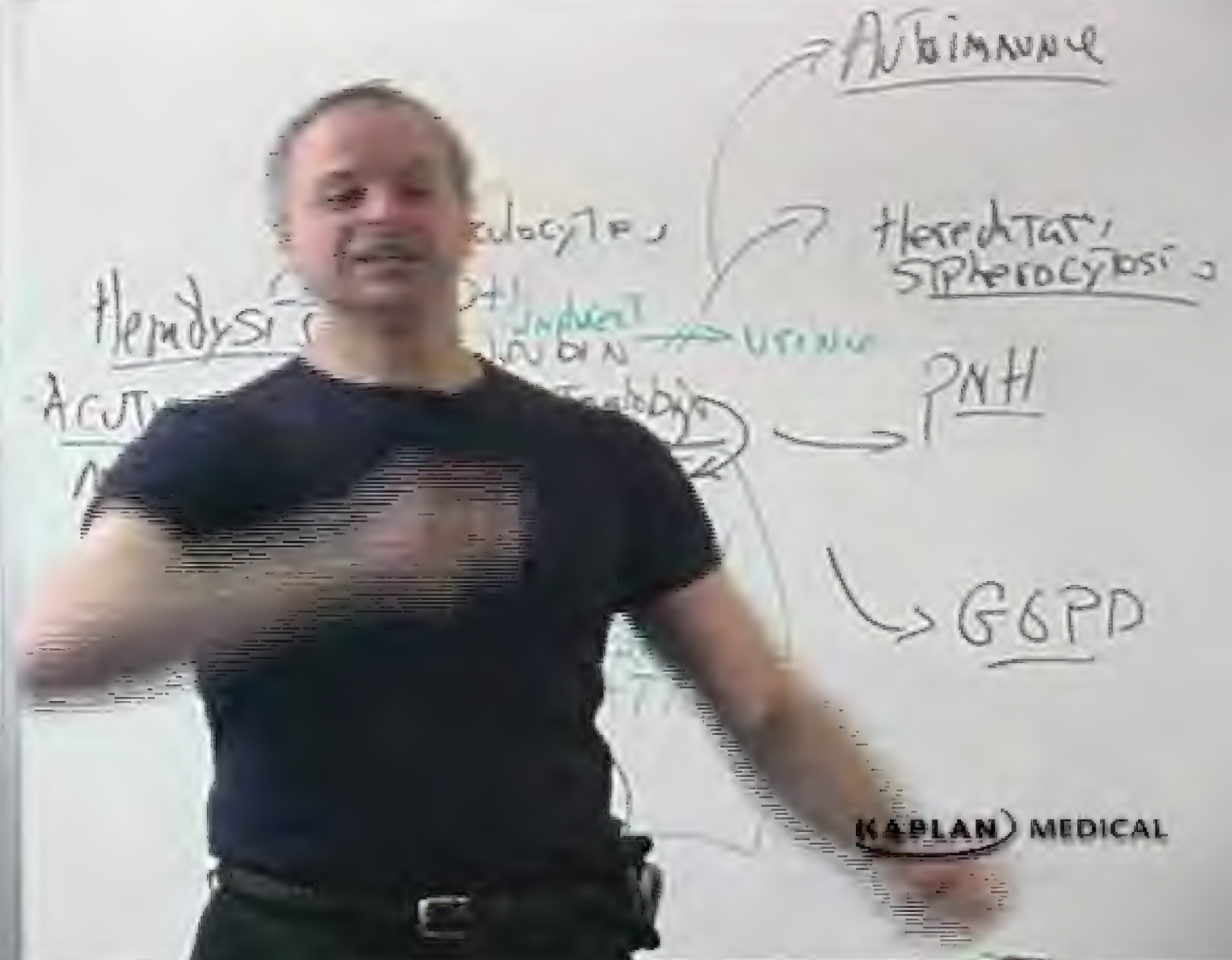
Urinalysis

→ Hg → Renal

Failure

ATN





→ Autoimmune

→ Hereditary Spherocytosis

→ PNH

→ PNH

G6PD



Sickle Cell
98%
99%
Saturation
4807 ED
Chest/Back

- Strokes
- Ulcers
- Osteo
- Aseptic Necrosis

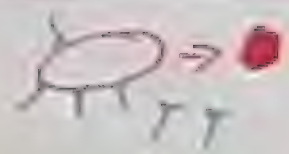
Dx Smear
Fluids/O₂

Treat

- Normal Spleen
- Normal CBC
- Only Renal

ISOSTENUSIA

Autism



Sickle Cell

98%

4807 ED Pain

99%

Chest/Back/Thighs

Saturation

- Stasis
- Ulcers
- Osteo
- Apoptotic Necrosis

Dx Smear Sickler

Fluids/O₂

Pain
mods

ANTIBIOTICS

Treat

- Normal Smear
- Normal CBC
- Only Renal
- SSS

27/11/2002

Q. 11

Saturday

- Stress
- Went to
- OS/Geo
- Aspirin
- Healed

[illegible]

- Found 2007
 - Found 130
 - 1000
 - 1000
 - 1000

KAPLAN MEDICAL

→ Antibody



98%

99%

Salivations

Side

480

Phos

Dx

Fluids

Antib

- Stomach

- Ulcers

- Osteo

- Apoptotic
Necrosis

Test

• Normal Sweat

• Normal CBC

Only Renal

ISO Strenuous

KAPLAN MEDICAL

→ ↑ Retinol

→ ↑ LDH

→ ↑ Bilirubin

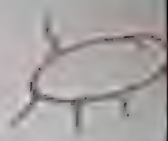
→ ↓ Haptoglobin

→ INTERVASCULAR

→ UPPER

→ ATN

→ ATN



→ Autoimmune

Hereditary
Spherocytosis

PNH

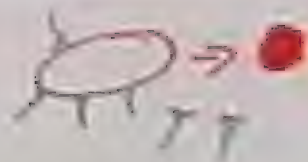
Hemolysis →
↑ Reticulocyte
↑ LDH
↑ Bilirubin
↓ Haptoglobin

Acute
MCV Normal
or slightly
↑ ↑

INTRAC

I
• Not
• Not
Only
I so

→ Albumin



98%
99%

Saturation

- Stomach
- Ulcers
- Osteo

- Optic
Necrosis

Flu
A

↑ Reticulocyte

↑ LDH

↑ Bilirubin

↓ Haptoglobin

↑ Creatinine

↑ Spherocytosis

↑ H

INTERV

UTIN

> H

TREAT

• Normal Saline

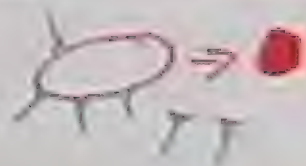
• Normal CBC

ONLY Renal

ISO STERIL

KAPLAN MEDICAL

Autoimmune



Hereditary
Spherocytosis

PNH

- Strokes
- Ulcers
- Osteo
- Apoptotic Necrosis

Lab

renal SWEAT

renal CBC

renal

renal

Sickle Cell

98%

99%

Saturation

48-57 ED Pain

Chest/Back/Thighs

Dx: Smear Sickler
Cells

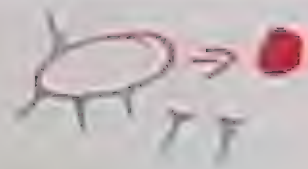
Fluids/O₂

Pain
meds

Antibiotics => Fever

> 100

IMMUNE



Sickle Cell

98%

4807 ED Pain

99%

Chest / Back / Thighs

Saturations

- Strokes
- Ulcers
- Osteo
- Apoptotic Necrosis

DX: Smear Sickler's

Fluids/O₂

Pain
meds

ANTIBIOTICS

Fever

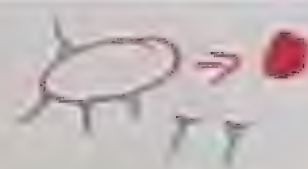
$> 100^{\circ}F$

TREAT

Transf

SO SICKNESS

Symptoms



Sickle Cell

Red Tact
Phagocytosis

PNH

G6P

98%
99%

Saturations

4807 ED Pain
Chest/Back/Thighs

Dx Smear Sickled Cells

Fluids/O₂

Pain
meds

Antibiotics

Fever

$> 100^3$

\downarrow ANC < 500

Temp > 101

→ Autism



Sickle Cell

98%
99%

4807 ED Per
Chest/Back/IT

Hereditary
Spherocytosis

→ Path

→ G6P

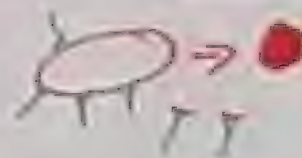
Dx Smear

Fluids/O₂

Antibiotics →

KAPLAN MEDICAL

→ Autoimmune



98%

99%

Saturations

- Stages

OSTEO

- APTIC
NECROSIS

TREAT

• Normal Sweat

• Normal CBC

ONLY Renal

ISO STANULLA

- KAPLAN MEDICAL

Hereditary
SPHEROCYTOSIS

Reticulocyte

LDH

↑ Bilirubin

↓ Haptoglobin

INTERVASCULAR

UTIMOLAR

→ Hg →

→ Hg →

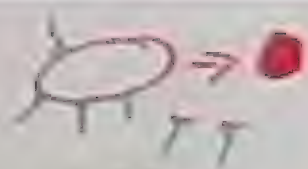
→ Hg →

→ Hg →

→ Hg →

→ Hg →

→ Hg →



Sickle Cell

98%
99%

48 07 ED Pain
Chest / Back / Thighs

Saturation

Stomach

Ulcers

Osteo

Septic
Arthritis

Dx Smear Sickled Cells

Fluids / O₂

Antibiotics

Pain
meds

Fever
 $> 100^{\circ}F$

3rd HD

HCT 32



AVN

NTAS
PROCY

H



Sickle Cell

98%

99%

Saturation

48 07 ED Pain

Chest / Back / Thighs

- Strokes
- Ulcers
- Osteo

- Aseptic
Necrosis

Dx Smear Sickled
Cells

Fluids/O₂

Pain
meds

Antibiotics

Fever

$> 100^{\circ}F$

3rd HD

HCT 30 \rightarrow 22

(5/3/4)

ISO STANUSIA

Autism

Hereditary
Spherocytosis

Unfused

2n+1

G6PD

KAPLAN MEDICAL

Hemolysis → ↑ Reticulocytes
 → ↑ LDH
 → ↑ Bilirubin
 → ↓ haptoglobin
 → ↑ Urobilinogen

Acute
 MCV Normal
 or Slight ↑
 ↑ ↑

→ Autoimmune
 → Hereditary Spherocytosis
 → 2NH

→ SPD



Sickle Cell

98⁶

99%

Saturations

4807 ED Pain

Chest/Back/Thighs

- Signs

Dx: Smear Sickled Cells

Fluids/O₂

Antibiotics

Pain meds

Fever

$> 100^3$

3rd HD

HCT 30 \rightarrow 25

Parvovirus B19

PCR

NLE



Sickle Cell

98%

4807 ED Pain

99%

Saturation Chest/Back/Thighs

- Scurfs
- Ulcers
- Osteo
- Aseptic Necrosis

Dx Smear Sickler Cells

Fluids/O₂

Pain meds

ANTIBIOTICS ⇒ Fever > 100³

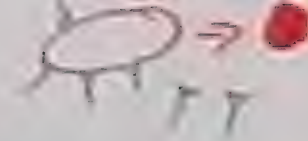
3rd HD ↓
HCT 30 → 25

Parvovirus B19
PCR

Treat

- Normal Sweat
- Normal CBC
- Only Renal
- U/V's

→ Autism



Sickle Cell

98%
99%

4807 ED Pain
Phos / Back / Th

Hereditary Spherocytosis

Path

- Stomach
- Ulcers
- Osteo
- Aseptic Necrosis

Dx Smear

Fluids/O₂

Antibiotics

Treat

- Normal Sweat
- Normal CBC
- Only Renal
- Stimulate

3rd HD
HCT 30 → 25

Parvovirus B19
PCR

Autoimmune

Hereditary
Spherocytosis

PNH

G6PD

TR
• Normal
• Normal
Only
ISS

KAPLAN MEDICAL

Hemolysis

Acute
MCV
or

↑ Retic

↑ LDH

↑ Bilirubin

↑ Urobilinogen







Autism

Hereditary
Spherocytosis

2N+1

→ GDP

$$\text{hemolysis} \rightarrow \uparrow$$
$$\frac{AsuT}{MCH}$$

Invest \rightarrow US/ALW



Sickle Cell

98%

97%

ED Pain

Pl - Back / Thigh

100%

7107K

HD

CT

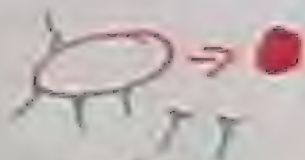
30 → 20

Parvovirus B19

CR

Iv M

KAPLAN MEDICAL

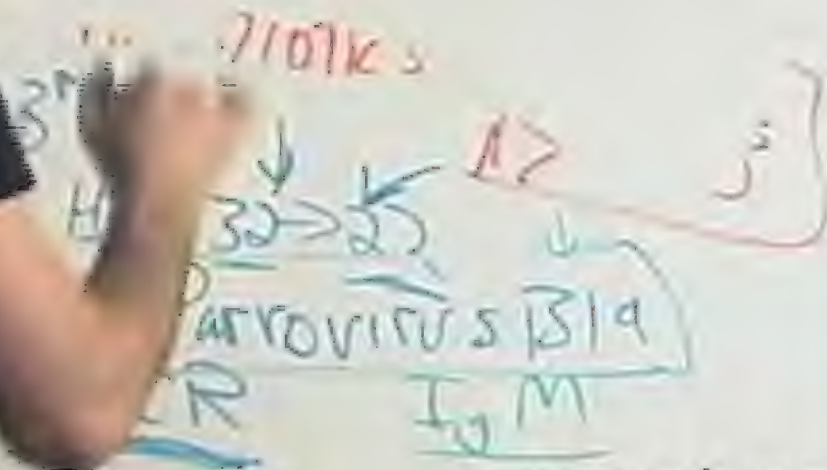


Sickle Cell

↳ ED Pain

Chest / Back / thigh

↳ Visual



IMMUNE

HEREDITARY SPHEROCYTOSIS

PNH

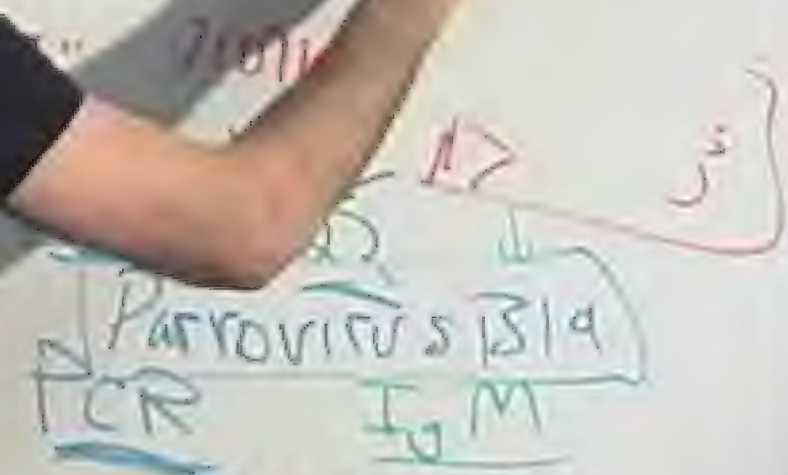
G6PD



Sickle Cell

4/8 07 ED Pain
Chest / Back / thigh

Visual
→ CNS /



Immune

Hereditary Spherocytosis

PNH

G6PD

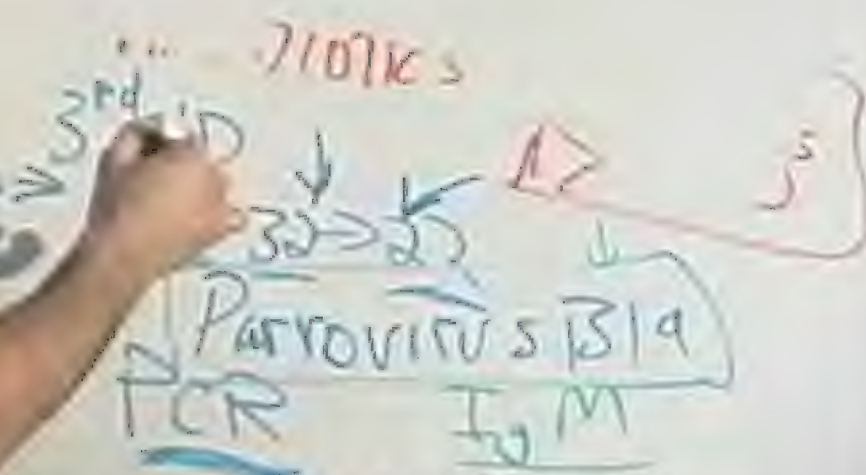


Sickle Cell

4807 ED Pain

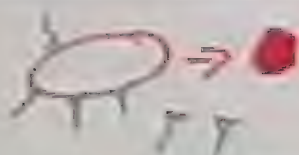
Chest / Back / Thigh

Visual
CNS / CVA



KAPLAN MEDICAL



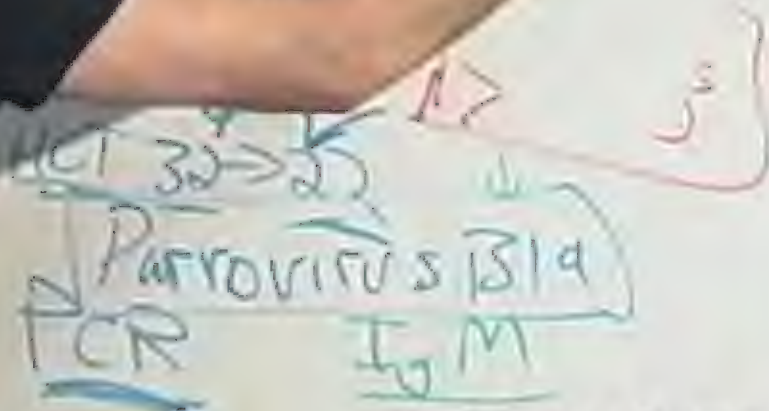


Sickle Cell

48 07 ED Pain

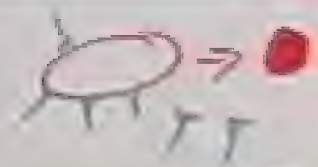
Chest / Back / Thigh

Visual Feeding
 ↔ CNS / CVA
 MAPISM





Autoimmune



Hereditary
Spherocytosis

→ PNH

→ G6PD

Sickle Cell

4807 ED Pain

Chest / Back / thigh

Visual Exclusion
CNS / OVA TRANSFUSION
Mapism

SS → A
T₂ / T₃

PCR
I₂ M



Albinism



Hypoxemia

Leukocytes

LDH

Bilirubin

& Haptoglobin

Strawberry

Urine

> Hg

Leukocytes

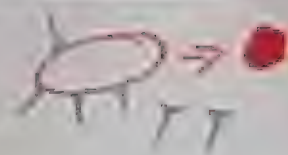
Treat

- Avoid SMOOT
- Avoid CBC
- Only Renal

Ischemia
KAPLAN MEDICAL

3rd HD
HCT
PCV





→ Autoimmune

Hereditary
Spherocytosis

Hydro

↑ Reticulocytes

↑ LDH

→ ↑ Bilirubin → urine

↓ Haptoglobin

→ PNH

intravascular

hemolysis

Hyg → Renal
Failure
→ AN

→ G6PD

Treat

- Normal Spleen
- Normal CB
- ONLY Renal

ISOSTENURIA



hemolysis
reticulocyte
LDH
Bilirubin
Haptoglobin
Vasculature
Dark
Renal Failure
ATN

→ Autoimmune

→ Hereditary Spherocytosis

→ PNH

→ G6PD



Hydroxy

Treat

- Normal SREAT
- Normal CBC
- ONLY Renal
- ISO STERNUS

IMMUNE



Sickle Cell

4807 ED Pain
Chest / Back / Thigh

Hydroxyurea
Prevent

Visual

Eclampsia

CNS

CVA

Transfusion

MAPISH

SS → AS

↑↑↑↑↑

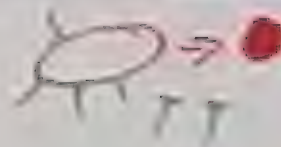
3rd HD
HCT 30 → 25

PARVOVIRUS B19
PCR

IF
TREAT
BC
ONLY Renal
ISO STENOSES



→ ALBIMANUE



emolysis → ↑ Reticulocytes
→ ↑ LDH
→ ↑ Bilirubin
→ ↓ Haptoglobin
NORMAL
OR SLIGHTLY
↑ ↑

HEREDITARY
SPHEROCYTOSIS

PNH

Hydroxyurea
Prevention

SPD

TREAT

- Normal smear
- Normal CBC
- ONLY renal

ISO SKELETON

KAPLAN MEDICAL

7 Autoimmune

Here
STEP

2N+1

Sickle Cell

4807 ED Pain

Chest / Back / Thigh

Feld

Penyakit

Visuā

Exclaves

CNS / CVA

15445 Fu

$$SS \rightarrow AS$$
$$2107 \text{ K}$$

1

W3rd HD

HCT $30 \rightarrow 25$

परमपूज्य श्री

20

I. M

- Normal Sweat
- Normal CBC
- Only Normal
- ISO STIMULIA

→ Abimanne

these
514

2A

Sickle Cell

4807 ED Pain
Phest / Back / Thigh

Folate

Hydroxyurea

Prevent

Visual

Excl. 9.10

TRANSFUS

CNS / CVA

SS \rightarrow AC

$$S \rightarrow AS$$

7107v

3rd HD ↓ A>
HCT 30 → 25

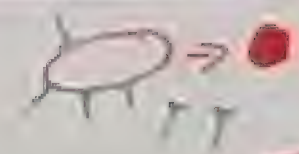
Parvovirus B19
PCR IgM

1741

ON, and
ISO STANDARD

KAPLAN MEDICAL

→ Autoimmune



- ↑ Reticulocyte
- ↑ LDH
- ↑ Bilirubin → Indirect → Urine
- ↓ Haptoglobin

INTERVASCULAR
URINE DARK
→ Hg → Renal
FAL
AT

thrombocytopenia

Folate
Hydroxyurea
Prevents
Pneumonia

at T
SREAT
Normal CBC
Only Renal
ISO STENOSES

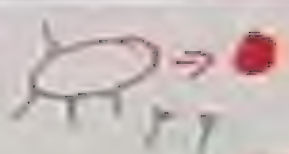
KAPLAN MEDICAL

3rd HD
HCT
PCR

Sid
48
Ches
V
S
T

Erythrocytosis
 ↑ DT
 Bilirubin
 Haptoglobin
 ↑ Creatinine
 ↑ Hg → Renal Failure
 ATN

→ Autoimmune
 → Hemolytic
 → Sickle



Folate
 Hydroxyurea
 Prevent
 Pneumonia

Sickle
 4/5 of E
 Chest / Bone
 Visual
 CNS /
 MAPS
 SS →
 TA
 1107K

Treat
 Abnormal Spleen
 CBC
 Renal
 Iso-Stimulo

3rd HD
 HCT 30 → 2
 Parvovirus
 PCR

→ Albuminuria
 → Hyperlipidaemia
 → Hyperuricaemia
 → Retinopathy
 → ↑ LDH
 → ↑ Bilirubin (Indirect) → Urine
 → ↓ Haptoglobin



Folate
Hydroxyurea
Prevent
Pneumonia

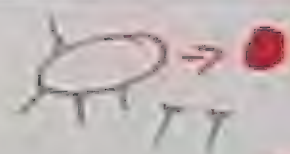
if NORMAL
 or SALT
 ↑ ↑
INTERVASCULAR
URINOLYSIS
 → Hg → Renal
 → Early
AT

TREAT
 • NORMAL SALT
 • NORMAL CBC
ONLY RENAL
SO STENOZA

KAPLAN MEDICAL

Hemolysis → ↑ Reticulocyte
 → ↑ LDH
 → ↑ Bilirubin → ^{Indirect} Urine
 → ↓ Haptoglobin

Albinism



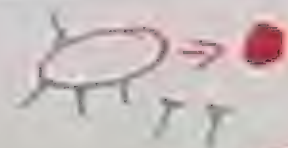
Folate
 Hydroxy
 Prevention
 Pneumonia

CV Normal
 or slightly
 ↑ ↑

Intravascular
 Hemolysis
 → Hg → Renal

Treat
 • Normal Sweat
 • Normal CBC
 Only Renal
 Iso Stenosis

→ Autoimmune



Sickle Cell

↳ ED Pain
Chest / Back / Thigh

Folate

Hydroxyurea

Prevent

Pneumonia

Visual

CNS / CVA

mapish

SS → AS
↑↑ / ↓↓

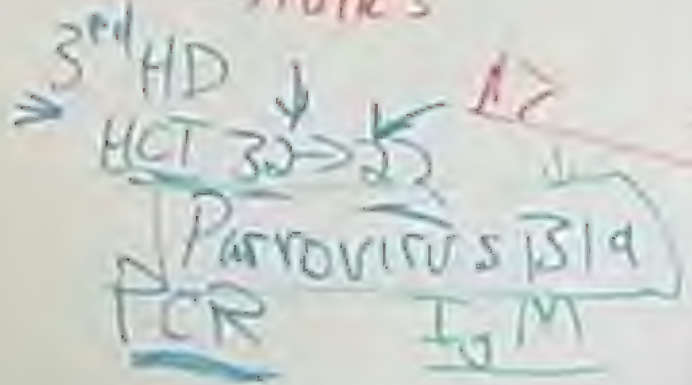
Eclampsia

Transfusion

TREAT

- Normal SREAT
- Normal CBC
- Only Renal

TREATMENT



→ Abtinnung

Sickle Cell

4807 ED Per

Chest / Back / Tr

1 Visual (Fcc)

→ CNS / CVA

$$SS \rightarrow AS$$

15107K5

HD 1-12

HCT $30 \rightarrow 25$

Pseudocystus

2017

1

KAPLAN MEDICAL

A man in a black t-shirt is seen from the back, writing on a whiteboard. The whiteboard has handwritten text including "STAT", "CYCLOS", and "H". There are also some green arrows and other markings on the board.

Sick

4507

Chet 18

Visual
CNS

→ $\mu_{\text{H}_2\text{O}}$

$$SS = \frac{1}{2}$$

... 7107

45

FD

$$\underline{HCl} \rightarrow$$

P_{1515}

12/24/0

107

CAL

KAPLAN MEDICAL

→ Autoimmune



erythrocytosis

PD

Sick

48 07

Chest

Visual
CN
Pria
SS
T4

HD

HCT 32

Parro
TCR

KAPLAN MEDICAL

→ Autism

→ Phagocytosis

PD



KAPLAN MEDICAL

St
4/8
Ph
V
S
T
HD
HCT
Pa
CP

→ Autoimmune



→ Hereditary Spherocytosis

→ PNH

→ G6PD

→ Autoimmune



Hereditary
Spherocytosis

OSMOTIC
FRAGILITY

PNH

→ G6PD







(HD) → IMMUNE

CELL RA

→ Thrombocytopenia

→ ↑ LDH

Hereditary
Spherocytosis

→ USING

Thromboglobulin

PNH

Intravascular

hemolysis

→ Hg → Renal
Failure
ATN

→ G6PD

KAPLAN MEDICAL

HD

Autoimmune

SLE
CLL

Penicillin



Fluoride

Splenic

DSNOTI

Fragility

G6PD



Hemolytic

Acute

Reticulocytes

↑ LDH

↑ Bilirubin

→ Renal Failure
→ ATN

(HD)

Autoimmune

SLE

CLL

Myeloma
Methyldopa

Hereditary
Spherocytosis

PNH

G6PD

HD

Autoimmune

SLE
CLL RA

Penicillin
Quinine
Methyldopa

Hereditary
Spherocytosis



Osmotic
Frags

Reticulocytes

↑ LDH

Bilirubin

Haptoglobin

Regulation

Renal
Failure
TN

Urine

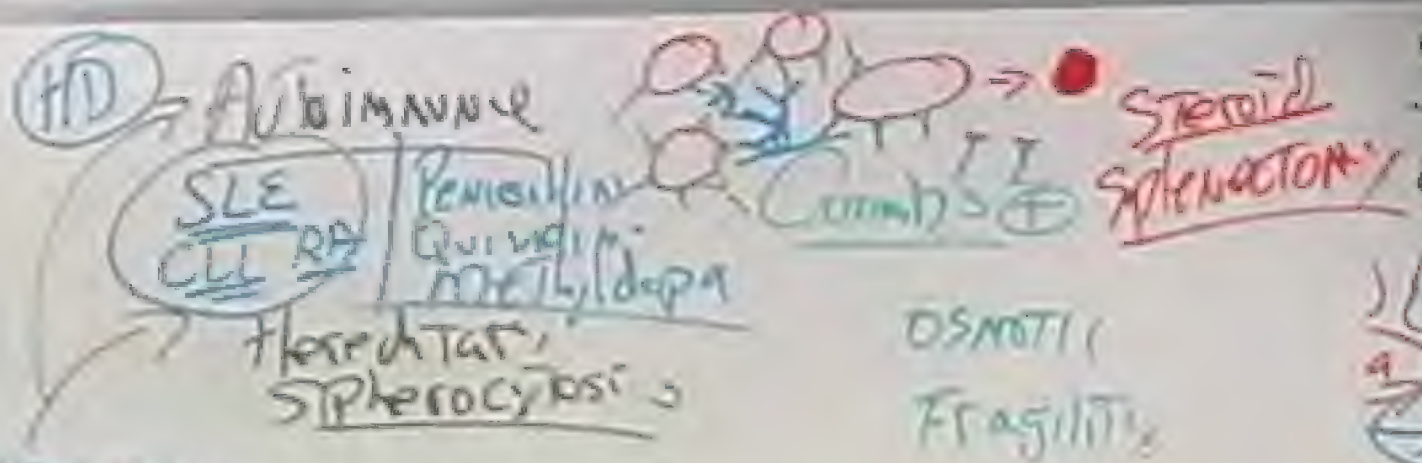
PNH

G6PD



Hemolysis \rightarrow ↑
 Acute
 MCN

HD \rightarrow Autoimmune
 SLE RA
 CLL
 Penicillin
 Quinine
 Methyl
 Dapsa
 Hereditary
 Spherocytosis
 Urine
 PNH
 G6PD



Urine →
 Urine

PNH

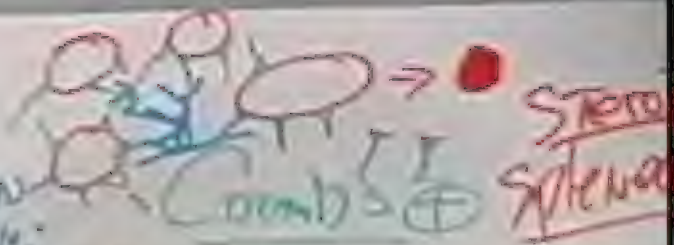
G6PD

(H/D)

Autoimmune

SLE
RA

Penicillin
Quinolone
Methyldopa



↑ Reticulocyte

↑ LDH

↑ Bilirubin

↓ Haptoglobin

Normal
Sensitivity
↑ ↑

INT
U

Hereditary
Spherocytosis

2NH

G6PD

OSMOTIC

Fracture

(HD)

Autoimmune

SLE

RA

Penicillin
Quinidine
Methyldopa

Hereditary
Spherocytosis

PNH

G6PD



Steroid
Splenectomy

Osmotic

fragility

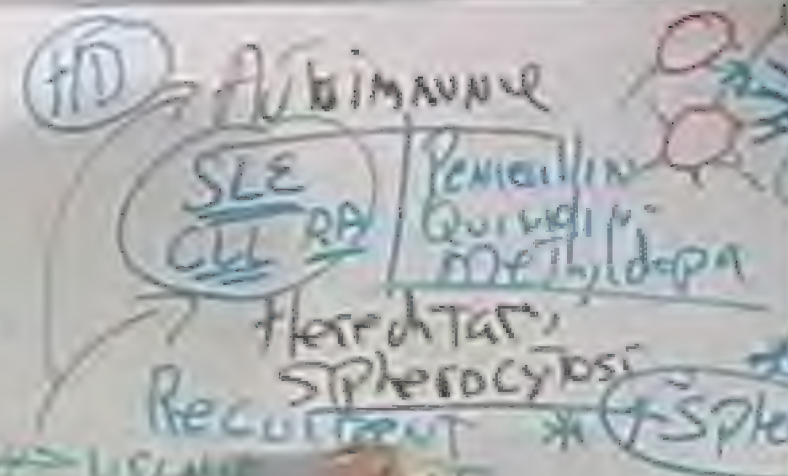


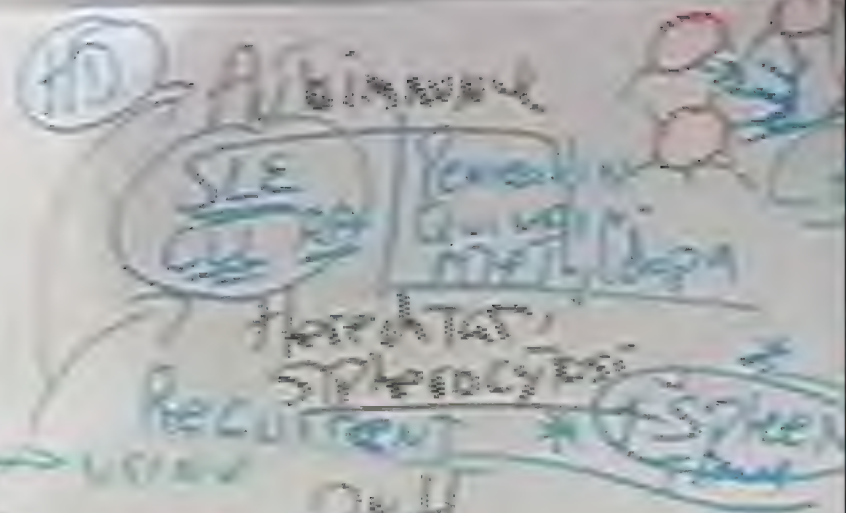
Hemolytic
Acute
MCV

Neutrophils

Indirect Bilirubin

Haptoglobin





↑ Reticulocyte
↑ LDH
↑ Bilirubin
↓ Hemoglobin
Anemia

PNH

G6PD

Hemolysis
 → ↑ Reticulocytes
 → ↑ LDH
 → ↑ Bilirubin
 Acute
 ACS Normal
 or Spleen





Hemolysis

Acute

leucocytes

indirect
bilirubin

HID

Autoimmune

SLE
RA
CLL

Penicillin
Quinidine
Methyld

Hereditary
Spherocytosis
Recurrent

PNH

G6PD

(HD)

Antibimmune

SLE
RA

Penicillin
Quinidine
Methyldopa



Steroid
Splenectomy

↑ Reticulocyte

↑ LDH

↑ Bilirubin

↓ Haptoglobin

SI

↑↑
↑↑

INTERVUSC
UTINODIA

> Hg

Hereditary
Spherocytosis

Current

PNH

↑ Spher

OSMOTIC

Fragility

GGP

HD

Autoimmune

SLE

RA

Penicillin
Quinolone
Meth/Dopa



Countdown

Steroid

Hydrocortisone

→ ↑ Reticulocyte

→ ↑ LDH

→ ↑ Bilirubin

→ ↓ Haptoglobin

INTERVAL

UTINOL

→ Hg

Spherocytosis

TREAT

2NH

* Spleen

OSMOTIC

FRAGILITY



(HD) → Autoimmune
 SLE
 Penicillin
 Quinidine
 Methylpred
 Steroid
 Splenectomy / 1/8 of

Splenectomy
 Phosphatase
 Fragility
 Splenic
 2N+1

Chest / 1/8
 Visual
 CNS
 Map
 SS →
 7/07
 HD
 HCT 30 →
 Parvov
 PCR

(1D)

Albinism

SLE

RA

Penicillin
Quinine
Methyldopa



Spontaneous
Splenectomy

↑ Reticulocyte

↑ LDH

↑ Bilirubin

↓ Haptoglobin

↑ Ferritin

Spherocytosis

Current

2NH

↑ Spleen

Osmotic

Fragility



INTERV

INTERV

INTERV

INTERV

INTERV

INTERV

INTERV

INTERV

INTERV

KAPLAN MEDICAL

HD

Autoimmune

SLE
CLL RA

Penicillin
Quinidine
Methyldopa



Hemolysis
→ ↑ Reticulocytes
→ ↑ LDH
→ ↑ Bilirubin
→ ↓ Haptoglobin

Acute

MCV Normal
SASIT

INTERMITTENT

SPONTANEOUS
HEMOLYSIS

* Splenomegaly

PNH

G6PD

HD

Autoimmune

SLE

Renal

Guinea

Phenyl

Phenyl

Phenyl

Phenyl

Phenyl

Phenyl

Phenyl

Phenyl

Phenyl



Special
Stimulation

OSMTI

Fragility



Retikuloendothelial
↑ LDH
↑ Bilirubin
↓ Hemoglobin
↓ Hematocrit

↑ ALT
↑ AST
↑ ALP
↑ GGT
↑ Hg
↑ A

(HD)

Autoimmune

SLE

Penicillin
Quinidine
Methyldopa



Steroid
Splenectomy

erythrocyte

indirect bilirubin

Haptoglobin

avascular

no dark

Hg → Renal Failure
ATN

erythrocytosis

* Spleen

OSMOTIC

Fragility

(HD) → Autoimmune

SLE

Penicillin
Quinine
Methyldopa

TAT
Erythrocytosis

* Splenomegaly



Steroid
Splenectomy

OSMOTIC
Fragility



erythrocyte

↑ Immunoglobulin

Haptoglobin

vascular

no dark

Hg → Renal
Failure
ATN





HD

Autoimmune

SLE

Penicillin

Quinidine

Methyldopa

ATAT

Pherycyosis

ENT

ENT



OSMOTIC

FRAGILE

Spleen

Flow

→ Reticulocytes
→ ↑ LDH
→ ↑ Bilirubin
→ ↓ Haptoglobin

- Normal
+ SASHITK
↑ ↑

INTERVAL

INTERVAL

→ Ha

KAPLAN MEDICAL

(HIV) → Autoimmune
 SLE / RA / Penicillin / Quinidine / Methyldopa
 Reticulocyte ↑
 ↑ LDH
 ↑ Bilirubin
 Indirect
 ↓ Haptoglobin
 INTERVASCULAR
 URINOLYSIS
 → Hg →
 Osmotic Fragility
 Splenomegaly
 Steroid
 Splenectomy

2. Sickle Cell
1807 48 of ED 2016
Most Back Injury
1. Female Fracture
2. Male Fracture
3. Male Fracture
4. Male Fracture
5. Male Fracture
6. Male Fracture
7. Male Fracture
8. Male Fracture
9. Male Fracture
10. Male Fracture



HARLAN MEDICAL



KAPLAN MEDICAL



KAPLAN MEDICAL



KAPLAN MEDICAL



KAPLAN MEDICAL

HD

Autoimmune

SLE
RA

Penicillin
Quinidine
Methyldopa



↑ Reticulocyte

↑ LDH

↑ Bilirubin

↓ Hapt

Hemolysis

CUTP

MCV Normal
or slightly
↑ ↑

INTEG

UTRA

> 1

Hereditary

SPHEROCYTOSIS

RECURRENT

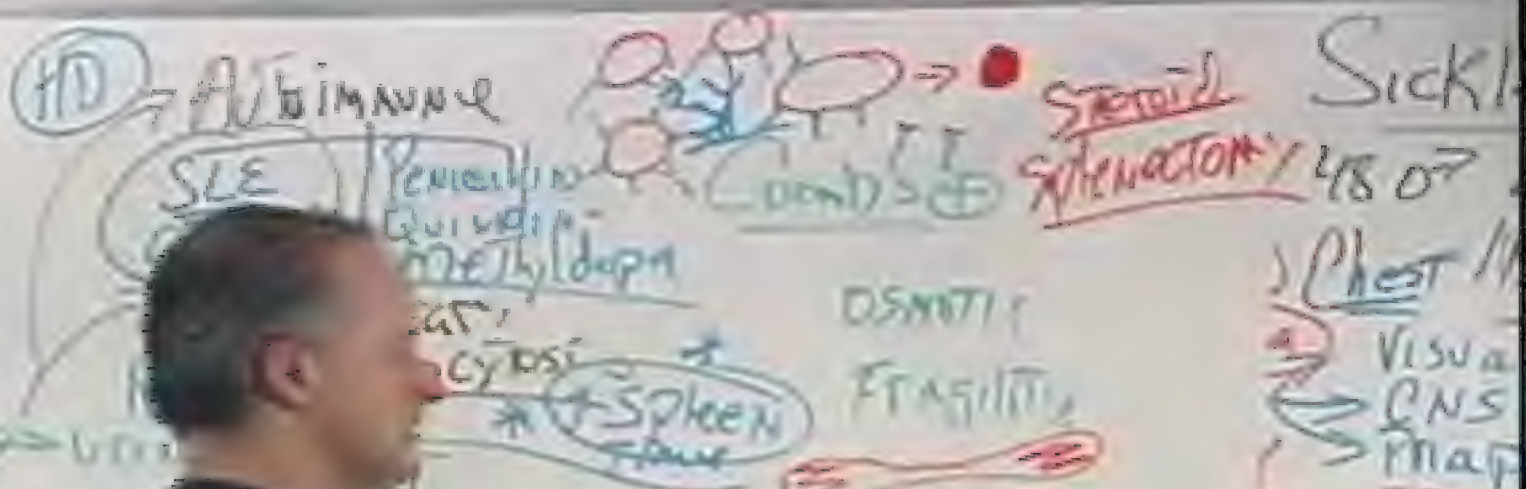
PNH

↑ Spleen

G6PD







Reticulocyte

LDH

Bilirubin

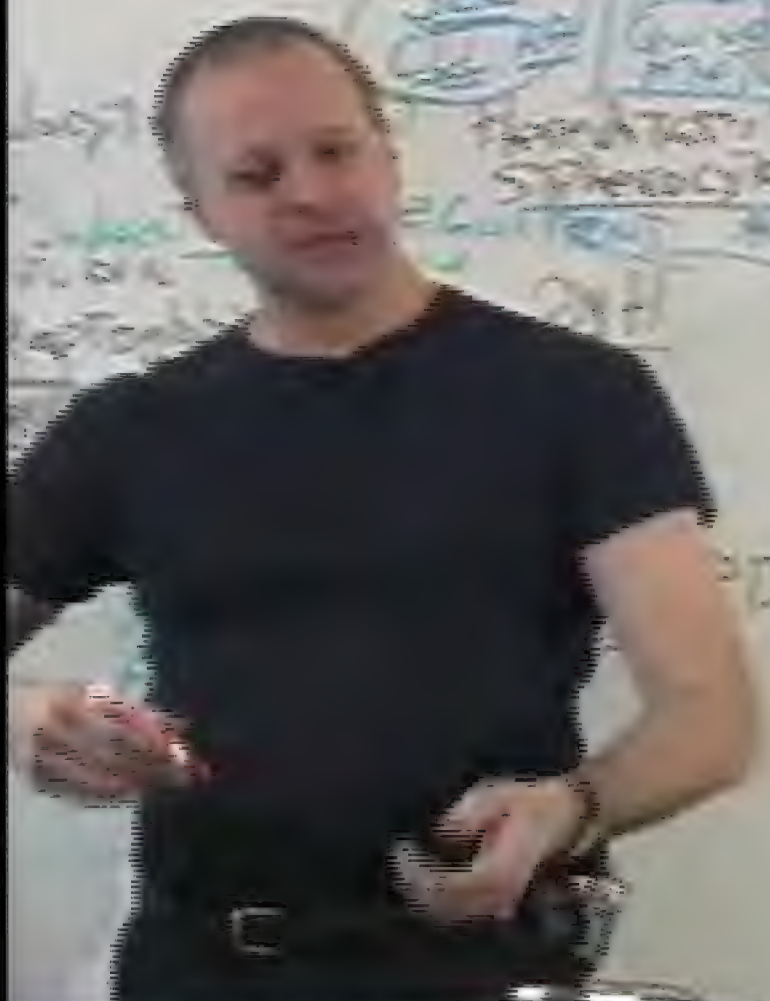
↓ Haptoglobin

INTERVASCULAR

UTERINE

Hy → Renal

ATN



① Affirmative

SLE

Guinea Pig

Splenectomy

Sickle Cell

ED

AS

Kaplan Medical

HD

Autoimmune

SLE
CLL RA

Penicillin
Quinine
Meth, Daps



STEROID
INTERACTION

DSNOTIC

Spleen

G6PD

KAPLAN MEDICAL



hemolysis

Acute

MCV Normal
or SAS ↑

(HD)

Autoimmune

SLE
RA
CLL

Penicillin
Quinidine
Methyldopa



Hereditary

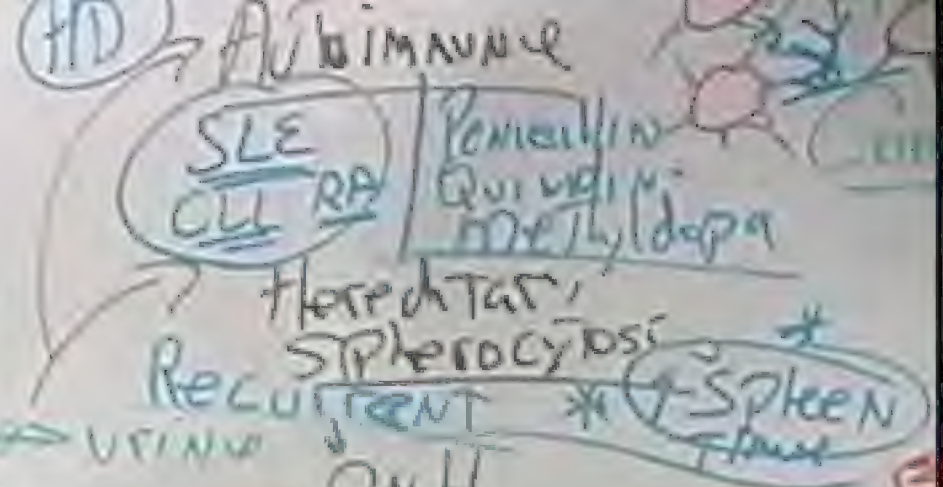
Spherocytosis

Recurrent

* Splenomegaly

PNH

→ G6PD



hemolysis

Acute

MCV

Dark

Recurrent

Haptoglobin

Vascular

Indirect

urinary

PNH

G6PD

hemolysis →

Acute
MCV ↓
↓

direct
CIN

urine

→ PNH
↑
↑

→ G6PD

(FD) → Autoimmune
SLE
CLL RA
Penicillin
Quinidine
Methyldopa
Hereditary
Spherocytosis
Recurrent
Spleen
Flare



Autoimmune

SLE

Penicillin

Quinidine

Methyldopa

cytosis

Spleen

↓ Res P₁ → ↑ PCO₂ → ↓ pH

Steroid

Splenectomy

4/8

DSMTT

Fragility

Splenectomy

ulocyte

Indirect

liver

Haptoglobin

vascular

no dark

Hg → Ren

Ac

Hb

HCT

PCV

→ TReit
 → ↑ LD
 → ↑ Bil
 → ↑



(HD) → Autoimmune

SLE
Penicillin
Quinine
Methyldopa



Steroid
Splenectomy 4/8 0

leucocyte

Indirect
Hemoglobin

aptoglobin

Vasculature

Dark

g → Ren

A-

Antibodies

erythrocytosis

* Splenectomy

OSMOTIC

Fragility

Splenectomy

PH

↓ RESPI → ↑ PCO₂ → ↓ pH

Handwritten medical notes on a whiteboard, including:

- Autoimmune** (circled)
- SLE** (circled)
- CLL** (circled)
- Penicillin**
- Quinidine**
- Methyldopa**
- Re...**
- cytosis**
- Spleen** (circled)
- DSNOTIC**
- Fragility**
- Splenectomy** (circled)
- Indirect**
- Albumin**
- Haptoglobin**
- Visceral**
- Vol...**
- ly**
- ↓ RES**
- PCO₂ → ↓ pH**
- Stimuli**
- Stimuli**
- Stimuli**

A man in a black t-shirt is standing in front of the whiteboard, gesturing with his right hand.

(HID) → Autoimmune

SLE
CLL RA

Penicillin



Steroid
Splenectomy
Sick
LAI ST

cytoplasm

nutrient
DNA

PTOglobin

vascular

Dark

→ Rapid
Failure
ATN

Recurrence

Spleen

DSMOIIC

Fragility

Splenectomy

$\text{res P}_1 \rightarrow \text{PCO}_2 \rightarrow \downarrow \text{pH}$

Capillary



SLE
CH

RA

Penicillin
Quinidine
Dextro, dextro

Flexibilität

Re: Spherocytosis

USNA

56
+ Spleen

$$\frac{2N+1}{1 \times 2}$$
$$\downarrow \text{RESP} \rightarrow \uparrow \text{PCO}_2 \rightarrow \downarrow \text{pH}$$

GSPD

KAPLAN MEDICAL

SLE
RA
CLL

Penicillin
Quinidine
Methyldopa

Coombs ⊕

Splenectomy 1/48 07

ST

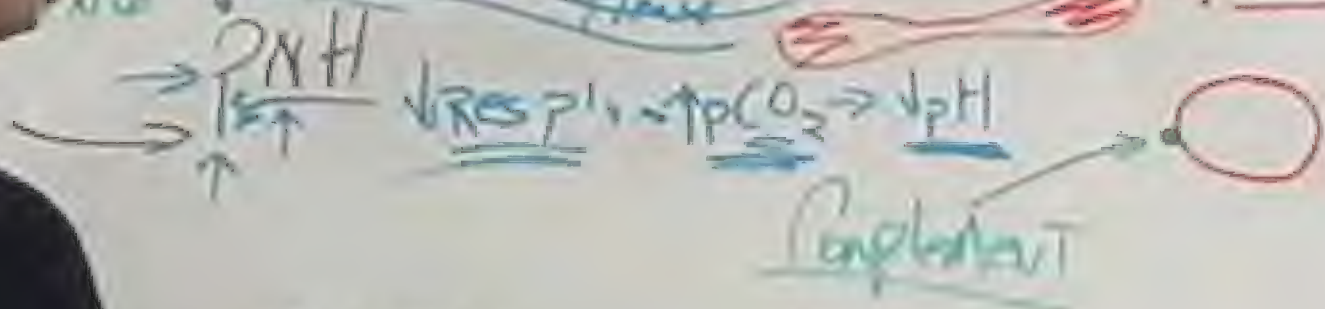
Hereditary
Spherocytosis

OSMOTIC

FRAGILITY

Splenectomy

* Splen



G6PD





HD → Autoimmune

SLE
RA
CLL
RA

Penicillin
Quinidine
Meth
Daps

Hereditary

Spherocytosis
Recurrent

Spleen

URINE

P.N.H.

res p → ↑ pCO₂ → ↓ pH

Pneumonia

G6PD

(H/D) → Autoimmune
 SLE RA Penicillin
 Quinidine
 Methylgluc
 Hereditary
 SPHEROCYTOSIS
 CURRENT *
 → PNH
 → G6PD
 Hemolysis → ↑ Reticulocyte
 → ↑ LDH
 → ↑ Bilirubin
 Indirect
 Acute
 MCV Normal
 or Spherocytes
 ↑ ↑

(H/D) Autoimmune

SLE / Penicillin / CLL / Hydroxychloroquine



Sick
Steroid
Splenectomy / 48 07
ST

cytes

indirect
bin

ptoglobin

vascular

Dick

→ Retic

Failure

ATA

Rec

Spleen

OSMOTIC

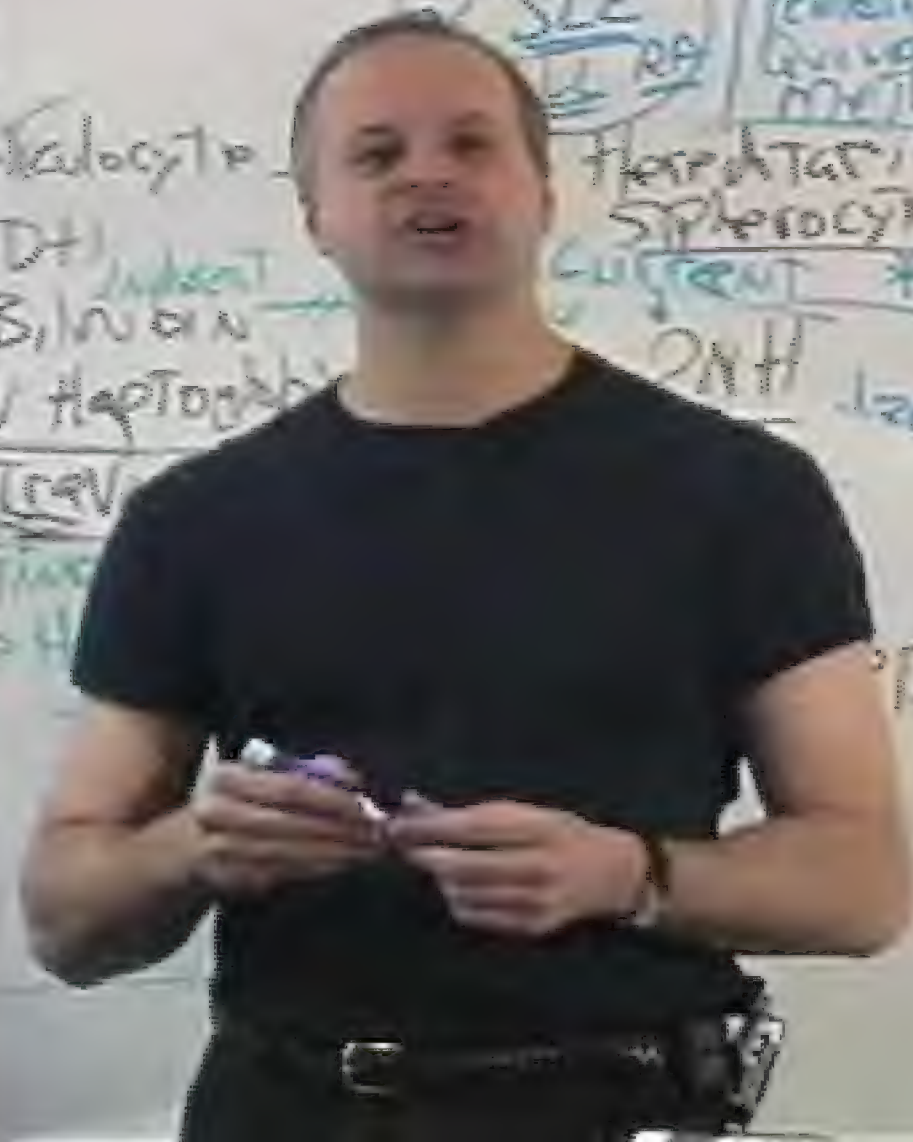
Fragility

Splenectomy

respiratory → $TPCO_2 \rightarrow \downarrow pH$

Respiratory





Handwritten medical notes on a whiteboard, with a man pointing to the text:

- Top Left:** (HIV) → Autoimmune
- Top Center:** SLE, RA, Penicillin, Quinine, Methylpred
- Top Right:** Steroid, Splenectomy
- Middle Left:** Reticulocyte, LDH, Bilirubin (↑ indirect), ↓ Haptoglobin
- Middle Center:** Spherocytosis, Splenectomy, PNH
- Middle Right:** Osmotic Fragility, Splenectomy
- Bottom Center:** $1.25 P_1 \rightarrow PCO_2 \rightarrow \downarrow pH$
- Bottom Right:** Complement, DAF

(H/D) → Autoimmune

SLE
RA
GL

Penicillin
Quinidine
Methyldopa



Steroid
Splenectomy / 4/8 07 E
ST / Ba

Hereditary
Spherocytosis
Recurrent

globin
lat

→ PNH
- AML
- AA

agility Splenectomy



Handwritten notes on a whiteboard, likely for a medical lecture, featuring a man standing in front of the board.

Left Side Notes:

- Hemolysis → ↑ Ret (reticulocytes)
- ↑ LDH
- ↑ Bilirubin
- ↓ haptoglobin
- Acute
- MCV Normal
- or slightly ↑

Right Side Notes:

- (HD) → Autoimmune
- SLE | Penicillin
- CLL | RA | Quinidine
- Methyldopa
- Hereditary
- Spherocytosis *
- Recurrent * → Spleen (splenectomy)
- urine → RNH
- AML
- A
- G6PD
- ↑ pCO₂

Bottom Right: KAPLAN MEDICAL



Sickle Cell

Steroid
Splenectomy / 48 hr ED Pain
st / Back / thigh

Exclusion
Transfusion

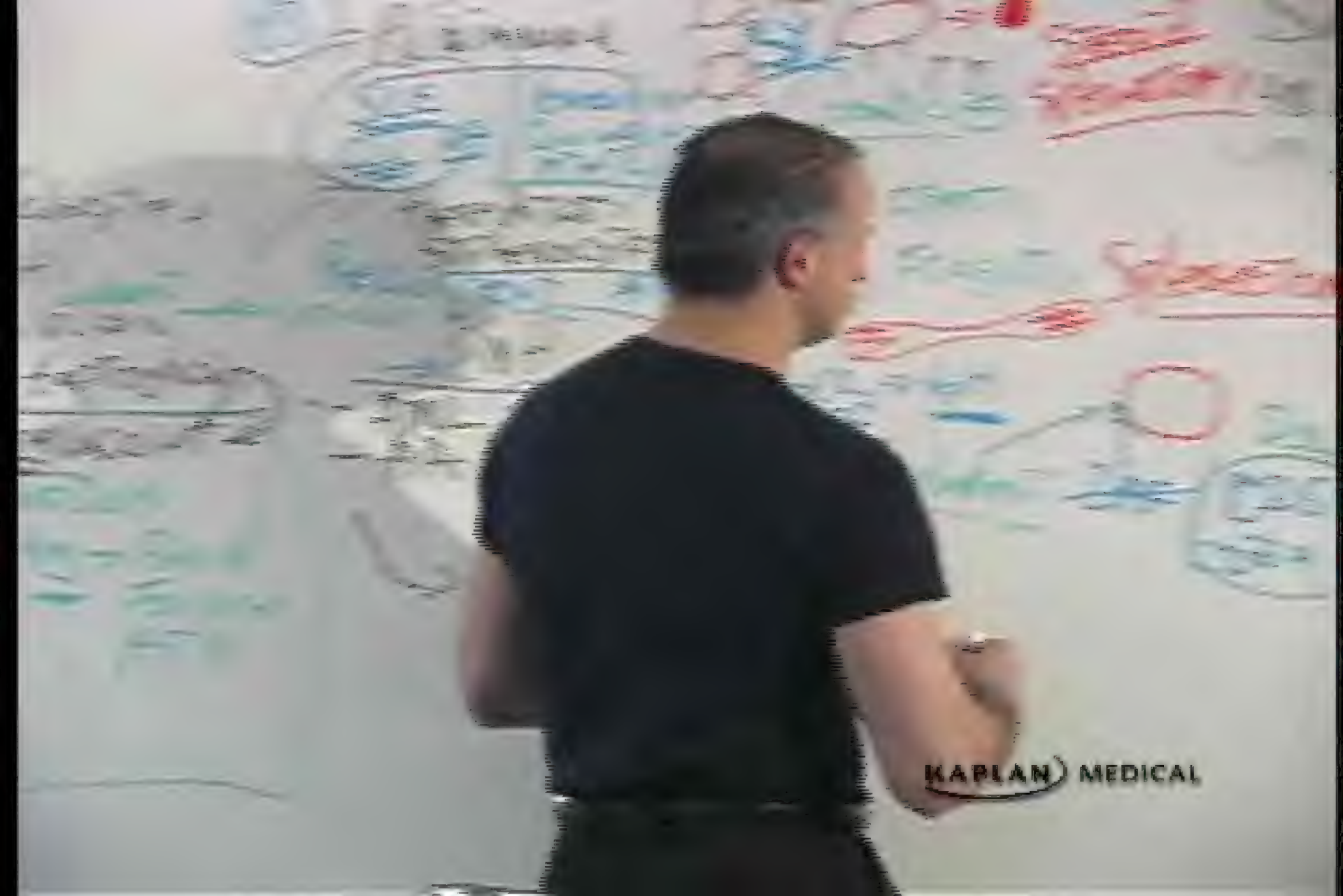
Splenectomy

Sugar-water
H/A

Hemolysis
Acute
MCV

(HIV) → Autoimmune
SLE
CLL RA
Penicillin
Quinidine
Methyldopa
Hereditary
Spherocytosis
Recurrent *
→ RNH
- AML
- AA
→ G6PD





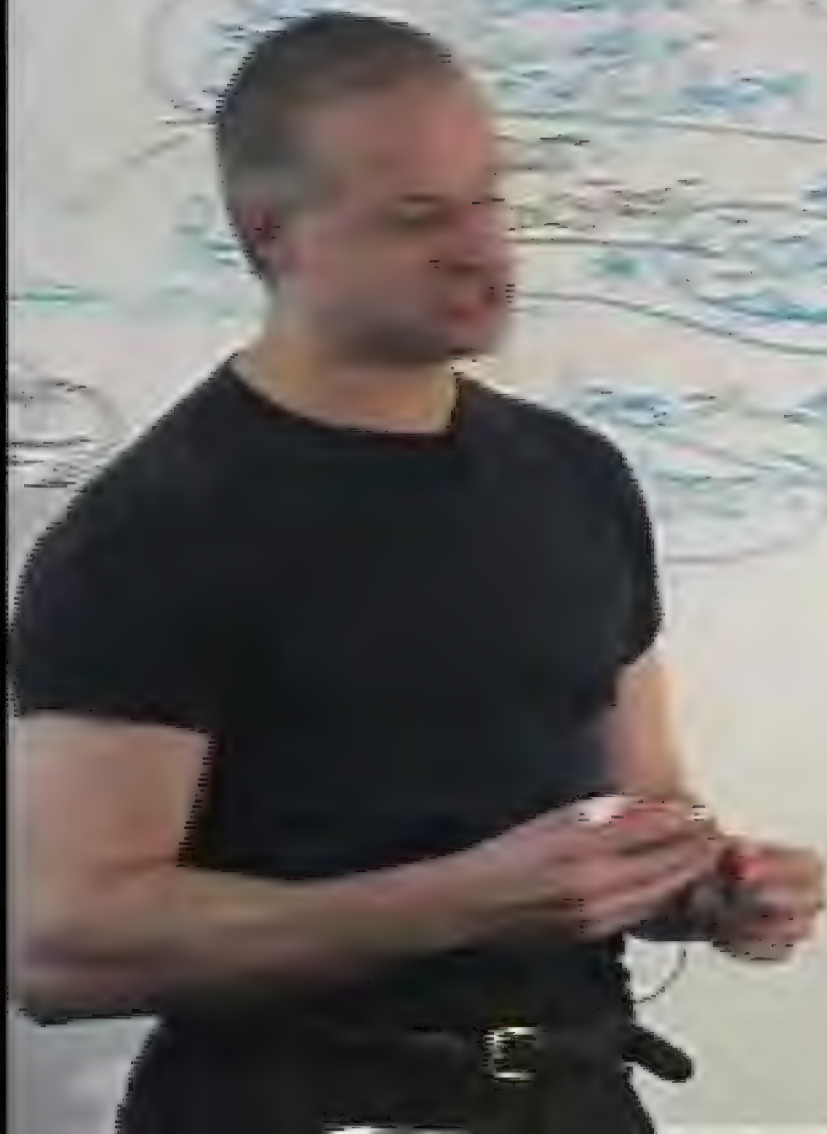
KAPLAN MEDICAL

(H/D) → Autoimmune
 SLE, CLL, RA, Penicillin, Quinidine, Methylphen
 (H/D) → Autoimmune

Hemolytic
 Reticulocyte
 LDH
 Bilirubin → Indirect
 Haptoglobin
 Vascular
 Dark
 → Reticulocyte

Hereditary
 Spherocytosis
 Recurrent
 Splenectomy
 ? N/H
 AML
 AA
 Thrombosis

G6PD

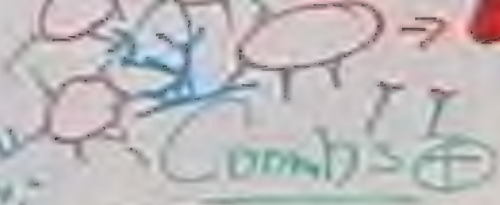


KAPLAN MEDICAL

(HID) → Autoimmune

SLE
RA
CLL

Penicillin
Quinidine
Methyldopa



Sickle (C)
Steroid
Splenectomy / 48 07 ED
ST / Back

Hereditary
Spherocytosis
Recurrent

OSMOTIC

Fragility

Splenectomy

→ PNH
- AM
- A

CO₂ → ↓ pH

Extravascular

Dx Rx
DAF / CD55
CD59
Level

(H/D) Autoimmune
 SLE RA Penicillin Quinidine Methyldopa
 CLL
 Hereditary Spherocytosis
 Recurrent
 Fragility
 Splenectomy
 Dx R
 CD55
 CD59
 Level
 Hemolysis
 $\uparrow pCO_2 \rightarrow \downarrow pH$
 Capillary
 DAF

Hemolysis

Acute

MCV

(10) Autoimmune
SLE
Chronic
Hemolysis
Spherocytosis
Recurrence
Thrombosis
AA
AML

(HD) → Autoimmune
 SLE
 CLL RA
 Penicillin
 Quindine
 Methyl

Hereditary
 SPHEROCYTOSES
 Recurrent

→ PNH
 - AML
 - AA
 Thromb

→ G6PD

Pathocyte

Hemolysis

Acute
 MCV Normal
 of

Indirect
 Bilirubin

urine

ptoglobin

scular

(HID) → Autoimmune
 SLE RA Penicillin
 CLL Quinidine
 Methylo
 Hereditary
 Spherocytosis
 Recurrent
 ?NH
 AML Thrombocytopenia
 AA
 G6PD
 Hemolysis → IDT cytotoxic
 Acute
 MCV Normal
 or SA
 Direct Coombs
 Globulin
 Sclerotic



(H/D) → Autoimmune

SLE

Penicillin
Quinidine

Methyldopa

Cytosis

* Splen

DSMTT

Fragility Splen

Respiratory \rightarrow $\text{PCO}_2 \rightarrow \downarrow \text{pH}$

Thrombosis

Conjugated Bile

Leukel

↑ Reticulocyte

↑ LDH

↑ Bilirubin

↓ Haptoglobin

INTERVUS

UTERO

→ Hg

Hemolysis

Acute
MCV ↓
or



(HIV) → Autoimmune

SLE
RA
CLL

Penicillin
Quinine
Methyl dopa



Steroid
Splenectomy 1/8
1/1

Eulocytes

↑ IgG
↑ IgM
↑ IgA
↑ IgE

Haptoglobin

↑ Vascu

↑ Vascu

↑ Vascu

Recu

Spleen

OSMOTIC

Fragility

Splenectomy

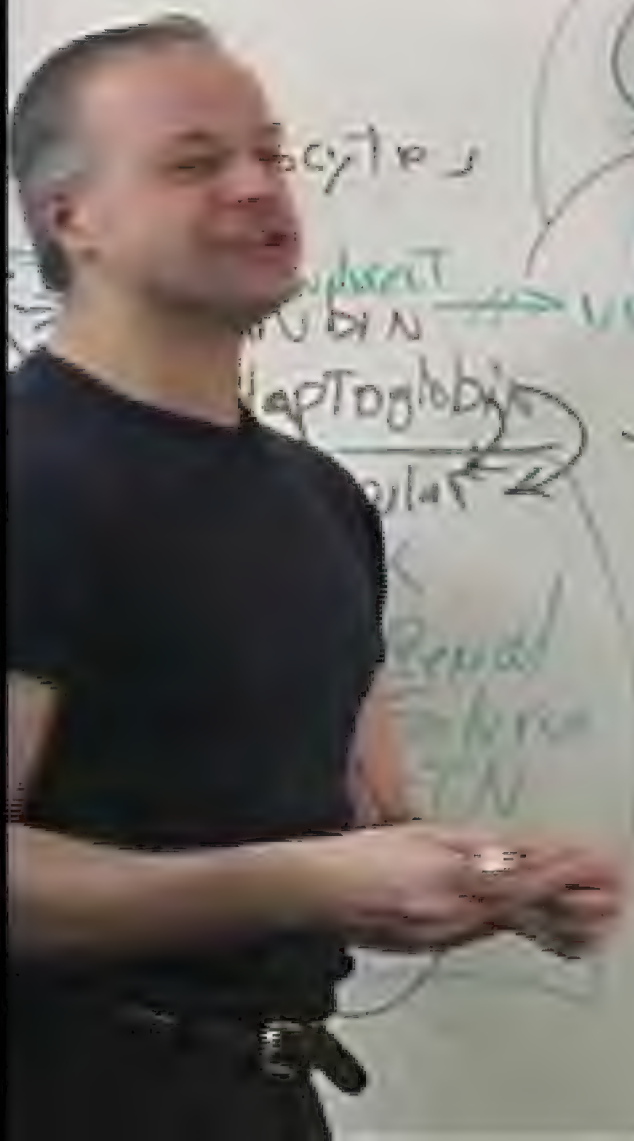
↑ PCO₂ → ↓ pH

Embryonic

Capillary DAF

CD5
CD59

Level



(HD) → Autoimmune

SLE
CLL RA

Penicillin
Quinidine
Methyldopa

Hemolysis → ↑ Reticulocytes
→ ↑ LDH
→ ↑ Bilirubin

Acute
MCV Normal
or slightly
↑ ↑

INT
URA
→

Hereditary
Phenocytosis

Thrombosis

G6PD

(HD) Autoimmune
 SLE / CLL RA / Penicillin / Quinidine / Dapsone
 Steroid / Splenectomy / LPS
 Osmotic Fragility Splenectomy
 Thrombosis
 $2.5\% \text{ Hb} \rightarrow \text{pCO}_2 \rightarrow \downarrow \text{pH}$
 Splenectomy / DAF / CD5 / CD59
 Heinz bodies
 SPD
 Hg \rightarrow RBCs
 A

HPD → Autoimmune

SLE
RA

Penicillin
Quinidine
Methyldopa

Steroid
Splenectomy

↑ Reticulocytes
↑ LDH
↑ Bilirubin
↓ Haptoglobin

Spherocytosis
Splenectomy

DSMT1
Fragility
Spleen

→ ↑ NH₄⁺ → ↑ PCO₂ → ↓ pH

Thrombosis

Capillary DAF

INTER
UTERINE
→ H

STD

Heinz
bodies



Handwritten notes on a whiteboard:

- hemolysis → ↑ L → ↑ E
- Acute
- MCV No
- of S

Handwritten notes on a whiteboard:

- HPD → Albimanne
- SLE
- CLL
- Hereditär Spherozytose
- Recurrent * Sph
- 2NH
- AML
- AA
- Thrombosis
- G6PD



Autoimmune
 SLE
 CLL RA
 Penicillin
 Quinine
 P9
 Flared
 Spleen
 Recurrent
 Splenectomy
 Fragility
 Osmotic
 Steroid
 Splenectomy
 1/8 07 ED Par
 ST/Back
 (Exc)
 Dx
 CD55
 CD59
 RBC
 Stero
 Sugar
 H/A
 KAPLAN MEDICAL

The whiteboard contains the following handwritten notes and diagrams:

- Top Left:** "Autoimmune" with a circle around "SLE" and "CLL RA".
- Top Center:** "Penicillin" and "Quinine" with a circle around "P9".
- Top Right:** "Steroid" and "Splenic" with "1/8 07 ED Par" and "ST/Back" below it.
- Middle Left:** "Flared", "Spleen", and "Recurrent".
- Middle Center:** "Splenic" with a diagram of a spleen, "Fragility", and "Osmotic".
- Middle Right:** "Steroid" and "Splenic" with "1/8 07 ED Par" and "ST/Back" below it.
- Bottom Left:** "Dx", "CD55", and "CD59" with a diagram of a red blood cell.
- Bottom Center:** "RBC" and "Stero" with "Sugar" and "H/A" below it.
- Bottom Right:** "KAPLAN MEDICAL".

hemolysis

Acute
MCV

leucocytes

Indirect
BILIRUBIN

(HD) → Autoimmune

SLE
RA
CLL

Penicillin
Quinidine
Methyldopa

Hereditary
Spherocytosis
Recurrent

* Spherocytes

→ PNH
- AML
- AA
Thrombosis

→ G6PD

(FID) → Autoimmune

SLE
RA
Penicillin
Quinidine
Methyldopa

Strenuous
Splenectomy

Reticulocyte
↑ LDH
↑ Bilirubin
↓ Haptoglobin

Hereditary
Spherocytosis
Current
PNH

OSMOTIC
Fragility
Spleen

↑ $2,3\text{-DPG}$ → ↑ PCO_2 → ↓ pH
Thrombosis

Complement
DAF

G6PD

Leukemia
Heinz
Warts

KAPLAN MEDICAL

Autoimmune

SLE
RA
CLL

Penicillin
Quinine
Methyldopa



Steroid
Splenectomy

↑ Reticulocyte

↑ LDH

↑ Bilirubin

↓ Haptoglobin

Hereditary

Spherocytosis

↓ Haptoglobin

Spleen

Osmotic

Fragility

Spleno

↓ pH

↑ PCO₂ → ↓ pH

AML
- AA

Thrombosis

Complement - DAF

→ G6PD

level

Henz wait



Handwritten notes on the whiteboard:

- Top right: Autoimmune
- Below Autoimmune: SLE, CLL, RA
- Next to autoimmune: Penicillin, Quinine, Methyldopa
- Below autoimmune: Haptoglobin, Spherocytosis
- Below Spherocytosis: Recurrent, Splen
- Below recurrent: Thrombosis
- Below thrombosis: G6PD
- Left side: Hemolysis, Acute, MCV
- Bottom right: KAPLAN MEDICAL

HPD → Autoimmune

SLE

Penicillin
Quinine
Methyldopa



STERO
SPLENOMEGALY

- ↑ Reticulocytes
- ↑ LDH
- ↑ Bilirubin
- ↓ Haptoglobin

ANEMIA
↑

INFLAMMATION
↑

TAF, EOCYPSIS
* Splenomegaly

OSMOTIC
Fragility

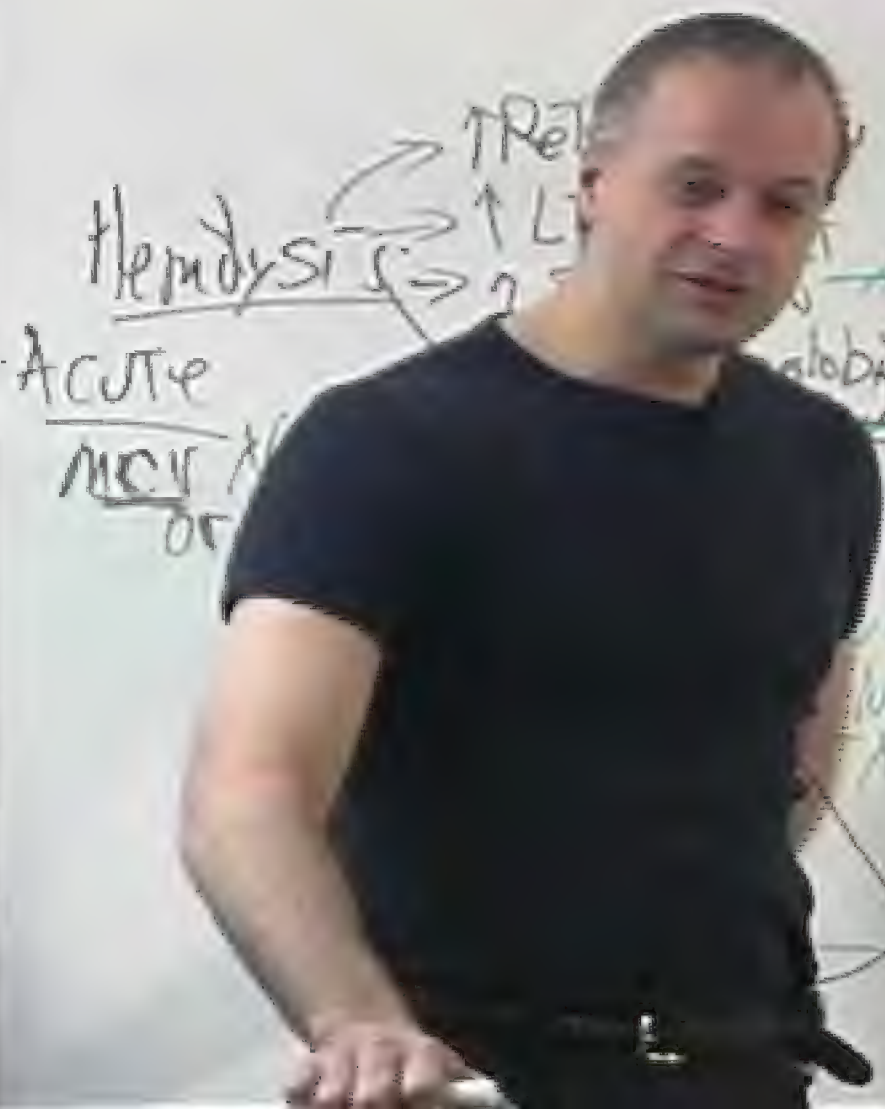
Respiratory → ↑ PCO₂ → ↓ pH

Thrombosis

Amphibian

Hemolytic
Hemolysis





(FD) → Autoimmune

SLE	Penicillin
CLL RA	Quinine
	Methyldopa

Hereditary
Recurrent Spherocytosis
* Splenomegaly

→ ?NH
- AML
- AA
Thrombosis

→ G6PD
Infection

(HD)

Autoimmune

SLE
CLL RA

Penicillin
Quinidine
Methyldopa

Hereditary

Spherocytosis

Recurrent

Spleen

PNH

res ph - ↑ PCO₂

AML

AA

Thrombosis

G6PD

INTERMEDIATE

KAPLAN MEDICAL

Hemolysis

↑ Reticulo

↑ LDH

↑ Bilirubin

Acute

MCV Normal
or Slightly ↓

↑ ↑





Reticulocytes
LDH
Bilirubin → Indirect
Haptoglobin
Acute
Hemolytic
SLE
CLL
RA
Penicillin
Quinine
Methyl
Hereditary
SPHEROCYTOSIS
Recurrent
*
→ 2NH
- AML
- AA
Thrombocytopenia
G6PD
infection



hem
Acc
→ ↑ Reticulocyte
→ ↑ LDH
→ ↑ Bilirubin
→ ↑ Haptoglobin
→ Vascular
→ Dark
→ Renal
Failure
ATN

(HD) → Autoimmune
SLE
RA
CLL
Penicillin
Quinolone
Meth
Hereditary
Spherocytosis
Recurrent
→ PNH
- AML
- AA
Thrombocytopenia
G6PD
Deficiency



Hemolysis → ↑ Reticulocyte
→ ↑ LDH
→ ↑ Bilirubin → Urine
Indirect

Acute
Normal
Slight
↑ ↑
Vascular
→ ANCA

NO Dark
→ Hy → Renal
Failure
ATN

(H) → Autoimmune
SLE
RA
Heredity
Recurrent
→ ANCA
AML (T)
AA
→ G6PD

Handwritten notes on a whiteboard:

- Retake 10
- LDH
- Bilirubin
- Acute
- Neutrophils
- Vasculitis
- Diagnosis
- AML
- AA
- Recurrence
- STP
- Flow
- Clot
- SLE
- AD

KAPLAN MEDICAL



Hemolysis → ↑ TRF
 → ↑ LDH
 → ↑ Bilirubin
 → ↓ haptoglobin
 ACUTE
 RBC NORMO
 OR SICKLE
 ↑ ↑



(HD)

Autoimmune

SLE
RA
CLL

Penicillin
Quinidine
Methylpred



Steroid

Splenectomy 1/8 of

Sick

Flare up
Spherocytosis
Recurrent
Spleen

OSMTI

Fragility

Splenectomy



PNH

Respiratory \rightarrow \downarrow pH

AML
AA

Thrombosis

Leukemia DAF CD55
CD59

G6PD
INFECTION



Leukemia

Heinz



KAPLAN MEDICAL

(HD)

ALBIMANUR

SLE
RA

Penicillin
Quinolone
Methyldopa

Hepatotoxic

Spherocytosis

Recurrent

Spleen

2NH

AML

AA

Thrombosis

G6PD

INFECTIONS

KAPLAN MEDICAL

↑ Reticulocytes

↑ LDH

↑ Bilirubin

↓ Haptoglobin

INTRAVASCULAR

HAEMOLYSIS

→ Hg → Renal Failure
ATN

NORMAL

SHALLOW

↑ ↑

(Hb)

Albinism

SLE
CH
RA

Penicillin
G
Methyldopa

thrombocytopenia
Spherocytosis
Recurrent
USING
Spoken

2NH

respiratory $\text{pCO}_2 \rightarrow \downarrow \text{pH}$

Thrombosis

G6PD
infection



Sickle
Splenectomy

Sickle

1/45 of
1/1000

OSMTI

Fragility

Splenectomy



Capillary

Dx

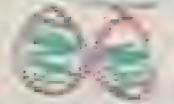
CD55

CD59



Level

Hemz



Rx

KAPLAN MEDICAL



(HD) → Autoimmune
SLE
CLL RA
Penicillin
Quinidine
Methyl
Hereditary
SPHEROCYTOSIS
RECURRENT *
Direct
IND → USING
Thrombosis
G6PD
INFECTION
KAPLAN MEDICAL



KAPLAN MEDICAL

~~Q~~
yea
*
9
G
-G
1bi
157
ANISO
RMT



KAPLAN MEDICAL

C

4/5
0 W
⇒

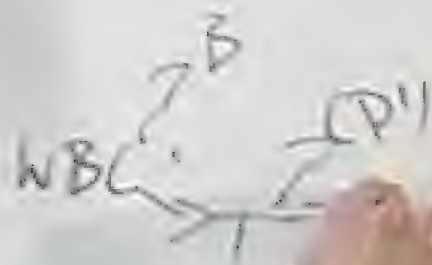


KAPLAN MEDICAL

Red

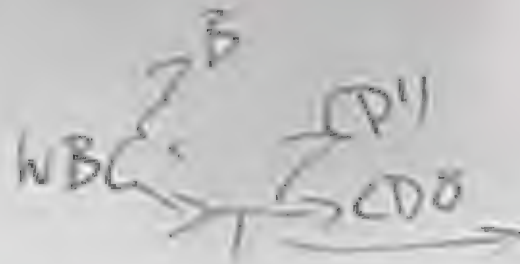
KAPLAN MEDICAL

Red



Platelet

Red



Platelet,

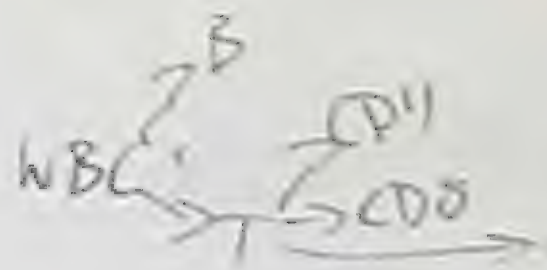
Red

B

CD4

CD8

Red



Platelet,

CLL

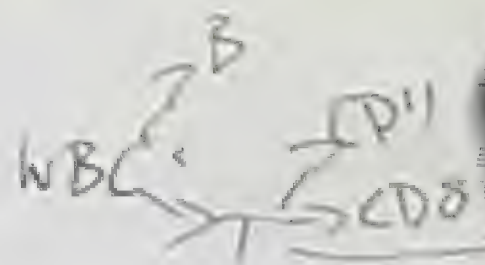
WBC

WBC

→ >90% lymphs

- 0-
- 1-
- 2-
- 3-
- 4-

Red



Platelet

CLL

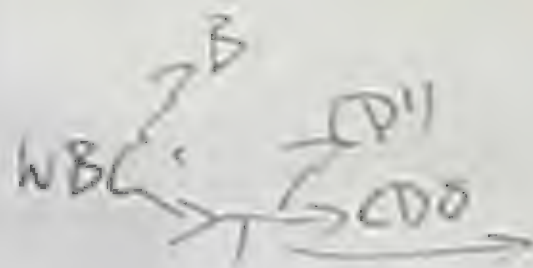
Effice

↓ WBC

⇒ >90%
lymphs

- 0 - ↑ W
- 1 - ⊕ AN
- 2 - SP
- 3 - AN
- 4 - ↓ P
- Co
- Ste

Red



Platelet

CLL

flow

WBC

>90%

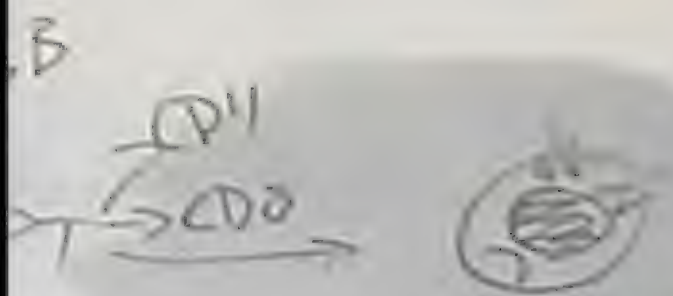
lymphs

- 0 - ↑ WBC
- 1 - ⊕ No
- 2 - SPD
- 3 - ANE
- 4 - ↓ P
- Coo
- Sten

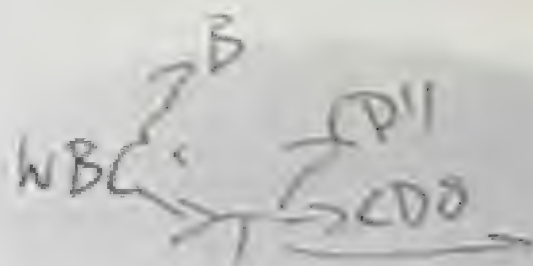
CLL

- 0 - ↑ WBC
- 1 - ⊕ Nodes
- 2 - spleen
- 3 - Anemia
- 4 - ↓ platelets

Coomb's
Steroids



Red



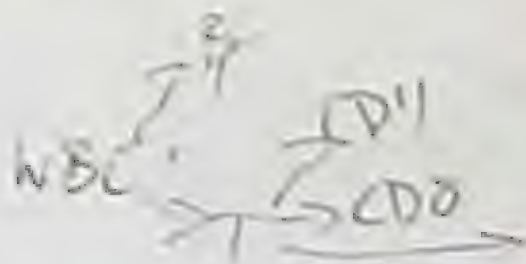
Platelet



CLL

- 0 - ↑ WBC
 - 1 - ⊕ AN
 - 2 - SP
 - 3 - AN
 - 4 - ↓
- 3C
90%
Co
STE

Red



Platelet

CLL

WBC
D WBC
⇒ >90
by

0 - ↑ WBC } 10-12
1 - ⊕ RBCs } years

2 - spleen 5

3 - Anemia

4 - ↓ platelets } 1-2
years

Coomb's

Steroids

Allo < 5

AUTO SCT

Aplastic
anemia



CLL

- 0 - ↑ WBC
 - 1 - ⊕ Nodes
 - 2 - spleen
 - 3 - anemia
 - 4 - ↓ platelets
- 10-12 years
- 5

Coomb's
Steroids

CLL

4 f/w

0 WBC

⇒ >90%
lymphs

0 - ↑ WBC } 10-12
1 - ⊕ Nodes } years
2 - spleen } 5

3 -

4 -

1-2
years

Fluda

Chlor

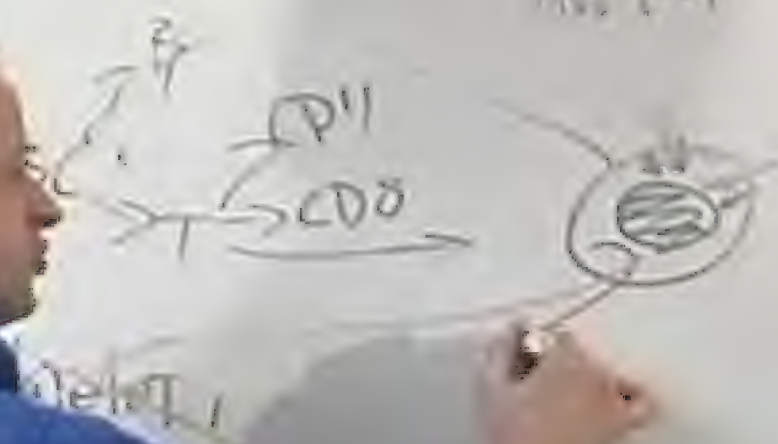
<50

SCT

KARVAN MEDICAL

2nd

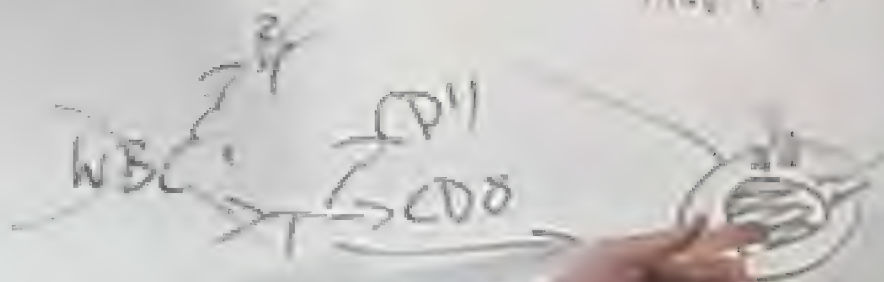
Aplastic
Anemia





Red

Aplastic
Neutrophils



Platelet

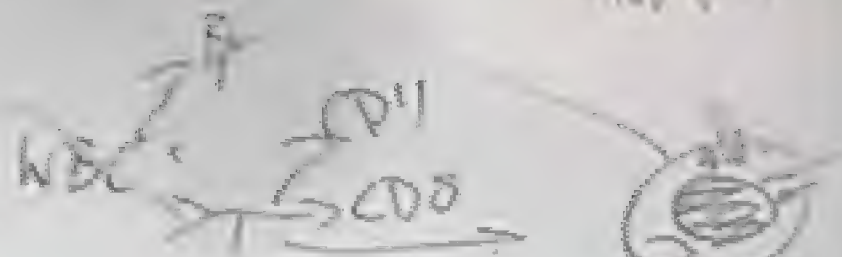
BMT

KAPLAN MEDICAL

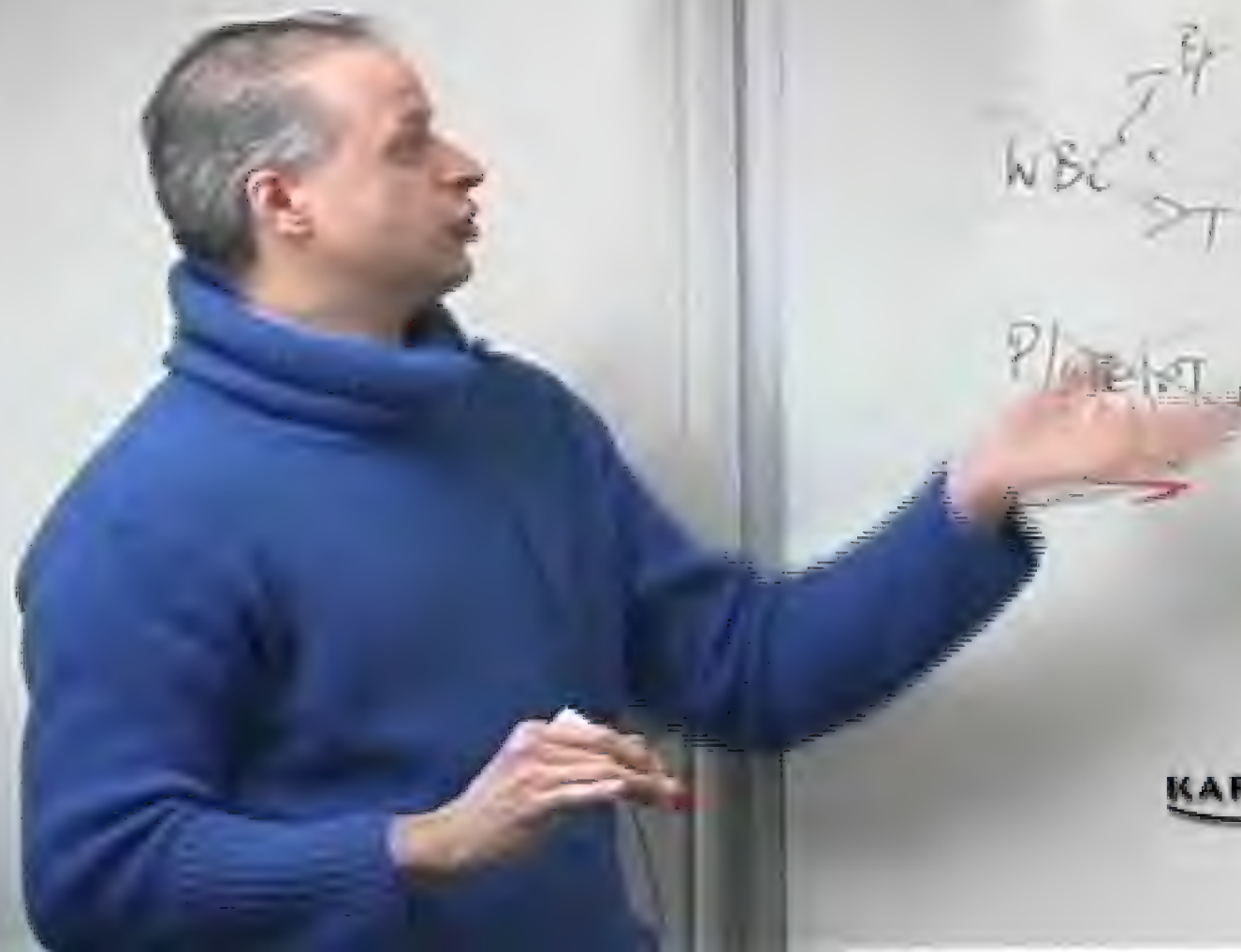


Red

Acute
Leukemia

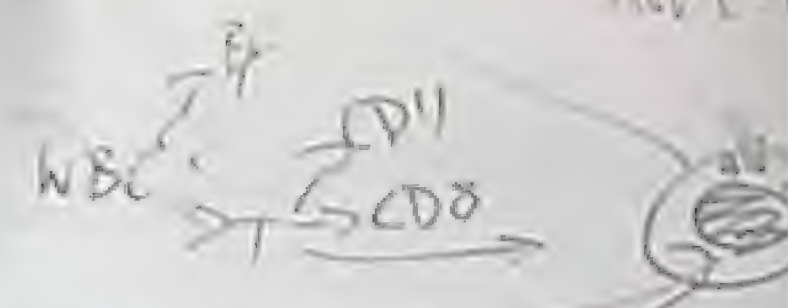


Platelet, Allo <50
+ Match
BMT



Rnd

Aplastic
anemia

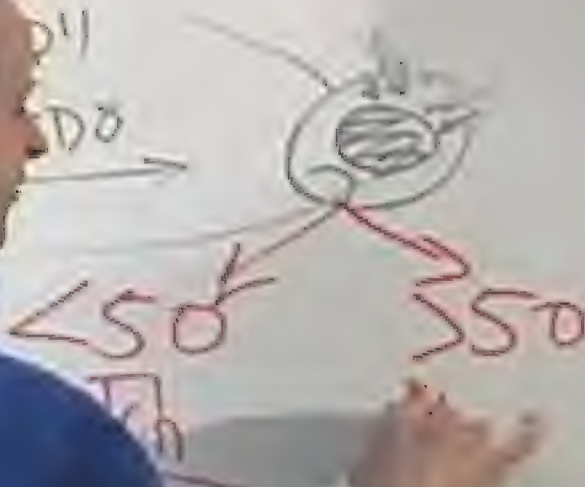


Platelet < 50
+ Match
BMT

Rad

$$= \frac{\text{Acoustic}}{\text{Nerve}}$$

2011
DO



Rad

$$\frac{\text{Applastic C}}{\text{Normal G}}$$

E

CD11

CD8



<50

+match

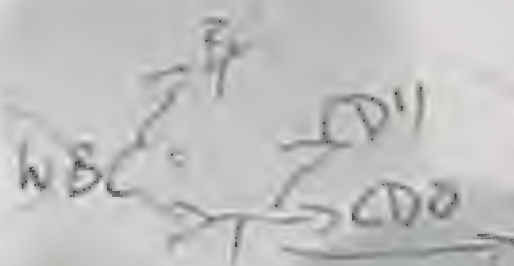
PMIT

>50

no match

2nd

Aplastic
anemia



Plasma

< 50

> 50

No match

* Cyclosporine

DMT

Red

Aplastic
anemia

WBC



50

50

No match

* Cyclosporine
+ Anti Thymocyte

Red

Apoptotic
membrane

WBC $\xrightarrow{CD4}$ $\xrightarrow{CD8}$



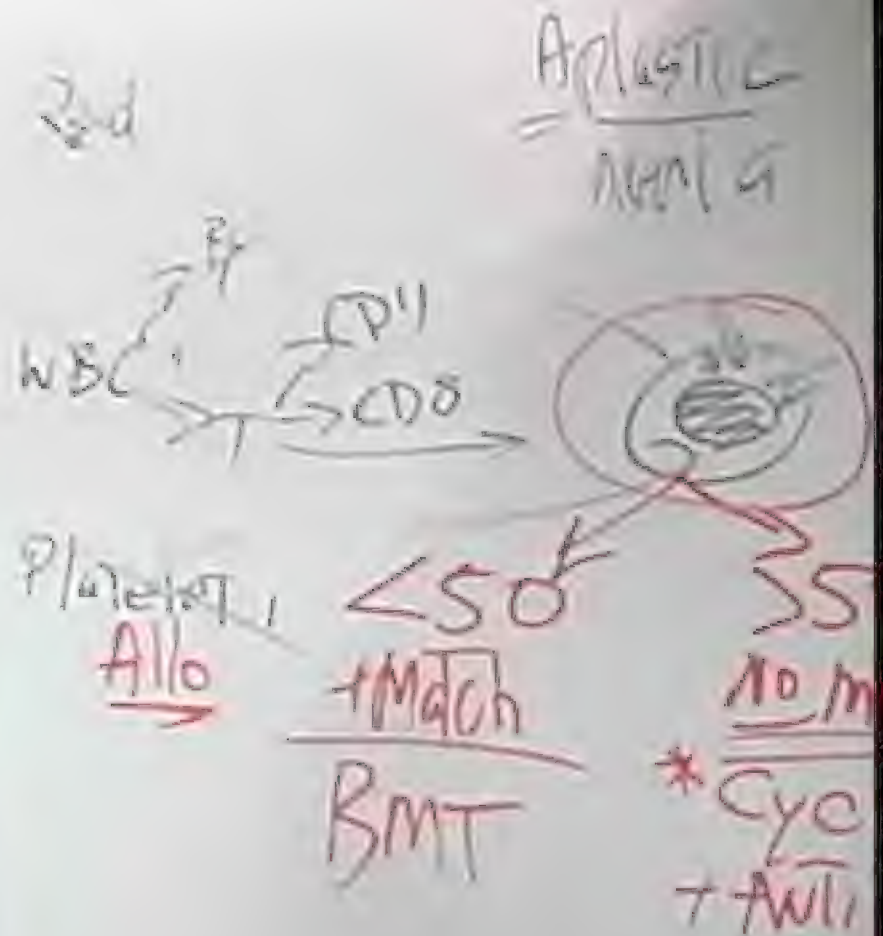
Platelet
Allo

<50
+ match

BMT

550
no match

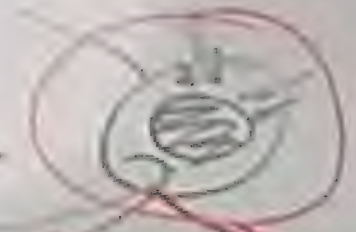
* Cyclosporin
+ Anti Thymo



Rad

Apoptosis
= Apoptosis

WBC



<50

Match

IT

>50

No match

* Cyclosporin

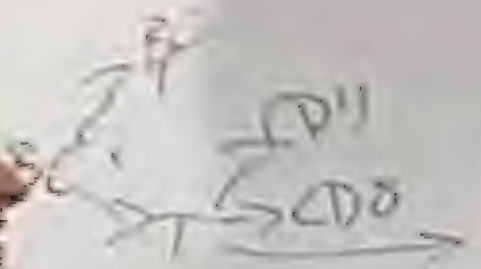
+ Anti Thymo

2nd

$\frac{11/14/12}{11/14/12}$

CLL

efficacy
DLBC
 $\Rightarrow >90\%$
lym



<50

>50

IMa

no match

BM

* Cyclosporine
* Anti-ILMO
* Rituximab

200

Aplastic C
Anemia

BC → CD3



Platelet, < 50
Allo
+ Match
BMT

> 50
No match
* Cyclosporine
+ Anti Thymocyte
Globulin

KAPLAN MEDICAL



KAPLAN MEDICAL



Red
WBC
Aplastic
Norm G
all
No
* Cyc
+ Adv

<50
+ Match
BMT

Diagram: A circle with a cross through it, containing the word "all". An arrow points from this circle to the text " <50 ".



APlastic
WBC
RBC
Match
BMT
No
Cyc
Ad

Acute
Leukemia

WBC → CD11
→ CD20



Platelet
Allo

<50
+ Match

BMT

>50

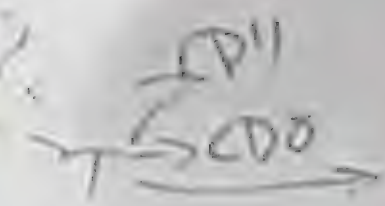
No Match

* Cyclosporine
+ Immune
Globulin

KAPLAN MEDICAL

Aplastic
Anemia

200



Allo
Allo

<50
+ Match

BMT

>50
No match

* Cyclosporine
+ Anti Thymocyte
+ Globulin



KAPLAN MEDICAL

Acute

Acute

ADULTS
AML

Acute Ab
A

Adults
AML

Acute Children
ALL

ADULTS
AML

Procytopoietin

Acute Children
ALL

Adults

AML

Procytopoietin

1°/Neutrophilic

Acute Children

ALL

Adults
AML

Acute Childre
ALL

Procytopoietin
1° Myeloid C
Infection

ADULTS
AML

Acute Children
ALL

Leucocytosis

1° Neutrophilic

Infection

Hep B, C, CMV

HIV

Adults

AML

Acute Childhood

ALL

Procytopoia

1° Neoplastic

Infection

Hep B, C, CMV

HIV

Drugs

Alcohol

Radiation

KAPLAN MEDICAL

Adults
AML

Acute Children
ALL

Leukopenia

1°/Neutropenic

Infection

Hep B, C, CMV

HIV

Uss

alcohol

Infection

Folate

KAPLAN MEDICAL

Adults

AML

Pathogenesis

1°/Metabolic

Infection

Hep B, C, CMV

HIV

Drugs

Alcohol

Radiation

BD/Folate

S/S

Acute Children

ALL

Adults

AML

Acute Childre

ALL

Paracytoma

1°/metastatic

Infection

Hep B, C, CMV

HIV

Drugs

Alcohol

Radiation

BD/folate

SLE

Sparan

KAPLAN MEDICAL

ADULTS

AML

ACUTE CHD

ALL

CYTOTOXIC

INFECTIOUS

FUNCTION

HP B, C, CMV
IV

KAPLAN MEDICAL

ADULTS
AML

ACUTE CMV
ALL

Pancytopenia

1°/Metastatic C

Infection

Hep B, C, CMV
HIV

Alcohol

Radiation
BD/Folate

SLE

Splen

Aplastic

KAPLAN MEDICAL

Adults

AML

Procytopaenia

1° Neutrophils

Infection

Hep B, C, CMV

HIV

SS

(10)

on

plastic

Acute Children

ALL

Tired

Anemia

Low Platelets

KAPLAN MEDICAL

Adults
AML

Pancytopenia

1°/Nocturnal C

Infection

Hep B, C, CMV

HIV

Drugs

Alcohol

Radiation

BR/Folate

SLE

Splen

Apopt

Acute Children
ALL

Tired

Anemia

Low Platelets

Infection

KAPLAN MEDICAL



ADULTS

AML

Pathogenesis

1°/Metabolic

Infection

Hep B, C, CMV

HIV

Drugs

Alcohol

Radiation

RD/Folate

LE

Phen

Alc

Acute Chl

ALL

Tired

Anemia

Low Platelets

Infection

KAPLAN MEDICAL



Adults
AML

Pancytopenia

1° Neutrophilic

Infection

EBV, CMV

Acute Child
ALL

Tired
Anemia
Low Platelets
Infection

KAPLAN MEDICAL



Adults

AML

Polycythemia

1°/Metastatic C

Infection

Hep B, C, CMV

HIV

Drugs

()

Drugs

()

Drugs

()

Drugs

()

Drugs

()

Drugs

Acute Children

ALL

Tired

Anemia

Low Platelets

Infection

KAPLAN MEDICAL

ADULTS

AML

PODOPHYLLIN

1°/NEUTROPHILIC

INFECTION

HEP B, C, CMV

HIV

DRUGS

ALCOHOL

DIET

FO/FO/FO

SLE

SPLEEN

ADULTS

Acute Children

ALL

Tired

ANEMIA

LOW PLATELETS

INFECTION

KAPLAN MEDICAL

Acute Children

ALL

Tired
Anemia
Low Platelets
Infection

Adults

AML

Leukocytosis

Infection

Hep B, C

HIV

...

...

...

...

...

...

...

KAPLAN MEDICAL

ADULTS
AML

Pancytopenia

1°/Nocturnal C

Infection

Hep B, C

HIV

Drugs

Alcohol

Radiation

BD/folate

SLE

Acute Children
ALL

Tired

Anorexia

Low Platelets

Infection

KAPLAN MEDICAL

Adults

AML

Pancytopenia

1° Neutrophils

Infection

Hep B, C

HIV

Folate

Iron

Aspirin

Acute Children

ALL

Tired

Anemia

Low Platelets

Infection

1805

KAPLAN MEDICAL

Adults
AML

Pancytopenia

1°/Metabolic C

Infection

Hep B, C

HIV

Drugs

Alcohol

Radiation

BD/Folate

Sp/No

Aplastic

Acute Children
ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal



Adults
AML

Pancytopenia
1° Neutropenia
Infection
Hep B
HIV

Radiation
DO/Folate
SLE
Splenomegaly
Aplastic

Acute Children
ALL

Tired
Anemia
Low Platelets
Infection
Blasts
Monoclonal

ADULTS

AML

POOR PROGNOSIS

1° NEUTROPHILIC

INFECTION

HEP B, C

TIV

DRUGS

(S)

DRUGS

SLE

SPLEEN

APLASTIC

Acute Children

ALL

Tired

Anemia

Low Platelets

INFECTION

Blasts

Monoclonal

Hand

KAPLAN MEDICAL

Adults
AML

Precursor

1°/metastic C

Infection

HBV, C

HIV

Drugs

Alcohol

Radio

chemo

Myelodysplastic

Acute

Acute Children
ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Immunological

ADULTS
AML

Precursor

1°/Metabolic

Infection

Hep B, C

HIV

Drugs

Alcohol

Radiation

BD/folate

SLE

SP/SPN

Acute Children
ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

Myeloperoxidase
Acute Myel

ADULTS AML

Pancytopenia

1°/metabolic

Infection

Hep B, C

HIV

Drugs

(Alcohol)

Radiation

BD / folate

SLE

Myelodysplasia

Aplastic

Acute Children ALL

Tired

Anorexia

Low Platelets

Infection

Blasts

Immunological

- Myelodysplasia
- Acute Promyelocytic

ADULTS
AML

Pancytopenia

1°/metabolic

Infection

Hep B, C

HIV

Drugs

Alcohol

Radiation

BD/folate

SLE

Splen

Aplastic

Acute Children
ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

CALL a

Myeloperoxidase
Alcohol

ADULTS
AML

Acute Children
ALL

Tired
mo Anemia
- Low Platelets
- Infection

Blasts

Proclonal

cytotoxic
And

CALL

BD/Folate

SLE

Splen

Aplastic



ADULTS
AML

m0

-

m7

Tired
Anemia

Low Platelets

Infection

Blasts

MONOCLONAL

Acute Children
ALL

70-90%
DRESS
Alcohol

Radiation
BR/folate

SLE
Splenomegaly
Aplastic

Myeloperoxidase
Acute promyelocytic leukemia

CALLA

KAPLAN MEDICAL



ADULTS
AML

(M3:)

M0

M7

Acute Child
ALL

Tired
Anemia
Low Platelets
Infection

Blasts
Monoclonal

Myeloperoxidase
CP

Myeloid
B0/plate

SLE

SP/AP (KAPLAN) MEDICAL

Aplastic

Adults
AML

Acute Children
ALL

M3/P

M0

Tired
Anemia
Low Platelets
Infection

M7

Blasts
Monoclonal

Myeloperoxidase
Auer Rods
CALLA

radiation
B0/folate
SLE
Splenomegaly
Aplastic

Adults
AML

(M3: DIC)

M0

M7

Acute Children
ALL

Tired
Anemia
Low Platelets
Infections

Blasts
Monoclonal

Triggers - Myeloperoxidase
Drugs - Acute Prom
Alcohol

CALL G

Radiation
BD / folate

SIS
ON
Aplastic

Adults
AML

Acute Children
ALL

(M3:DIC)

M0

M7

Tired
Anemia
Low Platelets
Infection

Blasts
Monoclonal

Myeloperoxidase
Acute M4

CALL

ation
folate

open
stic



Pain

Pain

KAPLAN MEDICAL

Adults
AML

Acute Children
ALL

M3: DIC

Tired
Anemia
Low Platelets
Infection

M7
Blasts
Monoclonal

Drugs - Myeloperoxidase
Alcohol - Acute Prom
Radiation - Daunorubicin

BD / folate A

CALL

ADULTS

AML

M3: DIC

M0

Tired

Anemia

Low Platelets

Infection

M7

Blasts

Myelodysplasia

Myeloperoxidase
Auer Rod

Doxorubicin

Ara-C

Acute Children

ALL

CALL

Dr. Jon
Aplastic

KAPLAN MEDICAL



Adults
AML

M3: DIC

M0

M7

Acute Children
ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

Myeloperoxidase
Auer rods

~~Idarubicin~~ Daunorubicin

Ara-C

CALL

Adults

AML

M3: DIC

M0

M7

Acute Children

ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

→ Myeloperoxidase
Auer Rod

CALLA

~~Idarubicin~~ Daunorubicin

→ Ara-C

M3 Add ATRA

Adults

AML

M3: DIC

M0

M7

Acute Children
ALL

Tired

Anemia

Low Platelets

Infection

Blasts

MONOCLONAL

- Myeloperoxidase
- Auer Rod

CALL

Idarubicin Daunorubicin

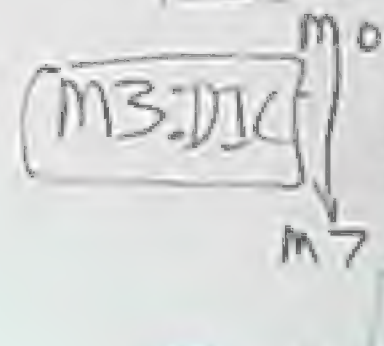
+ Ara-C

M3 Add ATRA

KAPLAN MEDICAL



DLTs
AML



Myeloperoxidase
Auer Rod
(Idolator) Daunorubicin
+ Ara-C
M3 Add ATRA

The Children
ALL

and
Leukemia
T-cell's
Lymphoma
Leukemia
Leukemia

ALL





KAPLAN MEDICAL



Adults AML Acute Childhood ALL

M3: DIC } m0 Tired
 } m7 Anemia
 } Low Platelets
 } Infection
 } Blasts
 } Monoclonal

Myeloperoxidase → CALL
Acute Myeloid
~~Idarubicin~~ Daunorubicin

→ Ara-C
M3 Add ATRA

ADULTS
AML

Acute Childre
ALL

M0
(M3: DIC)
M7

Tired
Anemia
Low Platelets
Infection
Blasts
Monoclonal

Myeloperoxidase
Auer Rod

CALL

Idarubicin Daunorubicin

Ara-C

M3 Add ATRA

KAPLAN MEDICAL

Adults
AML

Acute Children
ALL

Tired
Mo Anemia
Low Platelets
Infection

Blasts
Monoclonal

Leukopenia → CALL

Doxorubicin
Vincristine



ADULTS

AML

M3: DIC

M0

M7

Tired

Anemia

Low Platelets

Infection

Blasts

MONOCLONAL

Myeloperoxidase
Auer Rod

CALL

Idarubicin Daunorubicin

Daunorubicin

Ara-C

Vincristine

M3 Add ATRA

Prednisone

KAPLAN MEDICAL

Adults
AML

Acute Children
ALL

(M3: DIC)

Tired
Anemia
Low Platelets
Infection
M7

Blasts
MONOCLONAL

Developmental
over time

CALL

~~Idarubicin~~ Daunorubicin

Daunorubicin

Vincristin

Prednisone

Ara-C

M3 Add ATRA

KAPLAN MEDICAL

Adults

AML

(M3: DIC)

m0

m7

Acute Children

ALL

Tired

Anorexia

Low Platelets

Infection

Blasts

Monoclonal

Immunophenotype
And

CALLA

Doxorubicin

Doxorubicin

Vincristine

Prednisone

a-C

TRA

KAPLAN MEDICAL



Adults

AML

Acute Children

ALL

M3: DIC

M0

M7

Tired
Anemia
Low Platelets
Infection

Blasts

Monoclonal

ALL a

Doxorubicin

Doxorubicin

Ara-C

Vincristine

ATRA

Prednisone

KAPLAN MEDICAL



Adults
AML

M3: DIC

M0

M7

Acute Children
ALL

Tired
Anemia
Low Platelets
Infection

Blasts
Monoclonal

- Myeloperoxidase
- Auer Rod

CALLA

~~Idarubicin~~ Daunorubicin

Daunorubicin

+ Ara-C

Vincristine

M3 Add ATRA

Prednisone

KAPLAN MEDICAL

Adults

AML

Acute Children

ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

CALL

Doxorubicin

Vincristine

Procrisone

BMT

KAPLAN MEDICAL



Adults

AML

(M3:VLC)

M0

M7

Acute Children

ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

Myeloperoxidase
Alkaline Phosphatase

CALLA

Doxorubicin

Doxorubicin

Ara-C

Vincristine

M3 Add ATRA

Prednisone

ISMT

KAPLAN MEDICAL

ISMT

Acute Children

Adults
AML

ALL

B-DIC

m0
m7

Tired
Anorexia
Low Platelets
Infection
Blasts
Neurochemical

- myelopoietic
Auer Rod

Doxorubicin

Ara-C
3 Add ATRA

(ISMT)

100,000,000

Adults Acute Children
AML ALL

100,000,000

(M3)

Leukemia
Platelets
Tissue
Sts

Chemo

(Idol)

(M)

admission

(SMT)

ADULTS

Acute Children

ALL

Tired

Anemia

Low Platelets

Infection

Blasts

FUNCTIONAL

ALL

doxorubicin

vincristine

etoposide

KAPLAN MEDICAL

100

Chem 99.



ADULTS

AML

M3: DIC

M0

M7

Acute Children

ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

ALL

Doxorubicin

Vincristine

Prednisone

KAPLAN MEDICAL

BM

BMT

Adults
AML

Acute Children
ALL



Tired
Anemia
Low Platelets
Infection

Blasts
monoclonal

Chemo
more

Doxorubicin
Vincristine
Prednisone

KAPLAN MEDICAL

BMT

Adults
AML

Acute Children
ALL

m0
m7

Tired
Anemia
Low Platelets
Infections

Blasts
Monoclonal

ALL a

Chemo
more

Doxorubicin more

Vincristine

Prednisone

KAPLAN MEDICAL

IRMT

Adults
AML

Acute Children
ALL

100

Tired
No Anemia
Low Platelets
Infection

Blasts
Monoclonal

Chemo 99.
more 90

ALL

Doxorubicin more

Vincristine

Prednisone

KAPLAN MEDICAL

RMT

Adults Acute Children
ALL

Tired
Anemia
Low Platelets
Infection

Blasts
Monoclonal

CALL

100,0

Chemo 99.99

more 99.99

Doxorubicin more 99.99

vincristine

prednisone

KAPLAN MEDICAL

RMT

Adults

AML

Acute Children

ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Stomach

ALL

Chemo 99

more 9

more

more

more

more

more

more

more

more

more



Adults

Acute Children

ALL

100

(MS)

Tired

Anemia

Low Platelets

Infection

Blasts

WBC normal

Chemo 99%

ALL

more

90

Doxorubicin more

CRISTIN

WISOR

KAPLAN MEDICAL

Adults

Acute Children

ALL

100

(M3)

Tried

ANEROLO

low Platelets

infection

Blasts

NOCLONAL

Chemo 99.

more 90

rubicin more

ristinu

isonu

KAPLAN MEDICAL



KAPLAN MEDICAL

10,000,000 BMT



KAPLAN MEDICAL

BMT

Genetic Matched And Not 20%

Adults

AML

M0
M1
M2
M3
M4
M5
M6
M7

Acute Children

ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

CALL

Doxorubicin

Vincristine

Adriamycin

KARLAN MEDICAL

children

LL

10,000,000,000

BMT

99

Allogeneic

KAPLAN MEDICAL

00,000,000 BMT

Genetic Matched AND Related 20%

Unrelated

ADULTS

AML

M3/DIC

M0

M7

ACUTE CHILDREN

ALL

Tired

Anorexia

Low Platelets

INFECTIONS

Blasts

Monoclonal

- Myeloperoxidase
- Auer Rod

Idarubicin Daunorubicin

Ara-C

M3 Add ATRA

ALL

Daunorubicin

Vincristine

Prednisone

KAPLAN MEDICAL

BMT

BMT

Adults AML Acute Children ALL

3:1 VC } m0 Tired Anemia
Low Platelets
Infection
m7 } Bloasts
Functional

100,000,000

Chemo 99.9%

more 99.9%

VINCISTINE
PREDNISOLONE

CA-C
TRA

BMT

BMT

KAPLAN MEDICAL

ADULTS
AML

Acute Children
ALL

100,000,000,0

M3.D10

Chemo 99.9%
more 99.9%

KAPLAN MEDICAL



ADULTS

AML

M3 DIC

M0

M7

Acute Child
ALL

Tired

Anemia

Low Platelets

Infections

Blasts

MONOCLONAL

Myeloperoxidase
Auer Rods

Idarubicin
Daunorubicin

Ara-C

M3 Add ATRA

KARLAN MEDICAL

BMT

Daunorubicin

Vincristine

Prognosis

BMT

Cute Children
ALL

100,000

BM

Allogeneic

KAPLAN MEDICAL



DLITs
AML

Acute C
A

(M3: DIC)

M0

M7

Tired
Anemia
Low Platelets
Infection
Blasts
Monoclonal

Myeloperoxidase
Auer Rod

Doxorubicin

Ara-C

ATRA

KAPLAN MEDICAL

ISMT

Ducts
AML

Acute Children
ALL

Tired
No Anemia
Low Platelets
Infection
n7
Bleeds
Neutropenia

100

Hydrocortisone
Vincristine
Fluorouracil

C
P.A.

BMT

KAPLAN MEDICAL

ADULTS

AML

Acute Children

ALL

100

Tired
Anemia
Low Platelets
Infection

BIG N

W

SON

KAPLAN MEDICAL

MT

Adults

AML

Acute Children
ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

CALL

Doxorubicin

Vincristine

Procarbazine

KAPLAN MEDICAL

BMT

100

Adults
AML

Acute Children
ALL

(M3: DIC)

Tired
Anemia
Low Platelets
Infection
Blasts
Monoclonal

- Myeloperoxidase
Auer Rod

CALL

(Idarubicin) Daunorubicin

Daunorubicin

+ Ara-C

Vincristine

M3 Add ATRA

Prednisone

KAPLAN MEDICAL

(BMT)

(BMT)

Adults AML Acute Children ALL

(M3: DIC)

Tired
mod Anemia

(at)
CALLG

Doxorubicin
Vincristine
Prednisone

(BMT)

Adults
AML

Acute Children
ALL

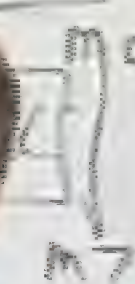
M3: DIC
M7

Jan 1 →
\$ 0.01



DxT's
AML

Acute Children
ALL



Tired
Anorexia
Low Platelets
Infection
Blasts
Proinflammatory

Jan 4
9 0.01

ALL

Doxorubicin
Vincristine
Prednisone

KAPLAN MEDICAL

ISMT

Adults AML Acute Children ALL

(M3:D)

Jan 1
\$1 0.01

CALL

Doxorubicin

VINCISTINE

KAPLAN MEDICAL

(BMT)

Children
ALL

BMT

Allogeneic Match
And
Match

KAPLAN MEDICAL

BMT

Autologous

Genetic Match and Relative

Match & Unrelated

KAPLAN MEDICAL

BMT

Autologous +/- Stem

Allogeneic Matched 20%

Unrelated 30%

Adults Acute Children
AML ALL

Tired
Neutrophils
Platelets
Infection
Losses
Oxycodone
ALL

Doxorubicin
Vincristine
Etoposide

Children

BMT



Autologous +/- Stem

Allogeneic Matched
AND

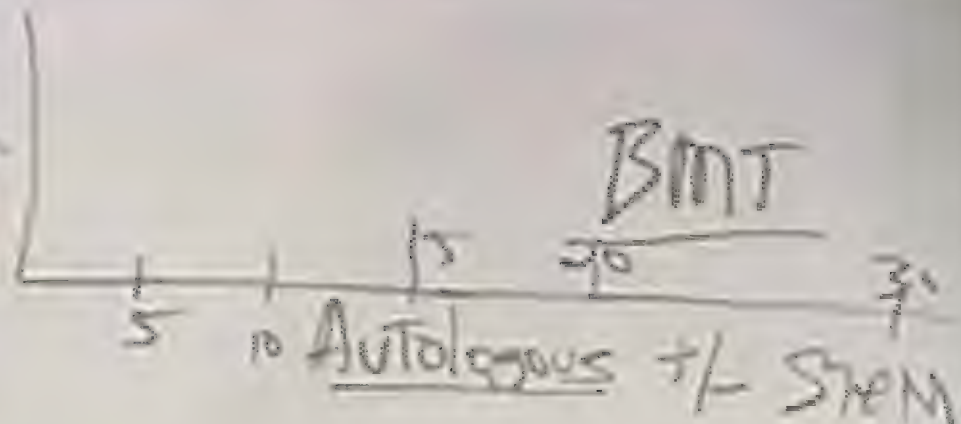
Matched
+/-

unrelated
cancer
ind

(BMT)

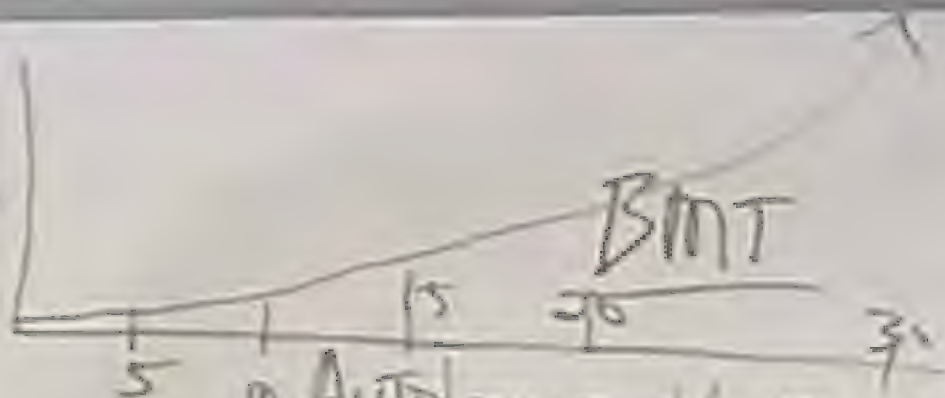
children

% infected ↑



Allogeneic Method
AND Re
Method

↓
infection



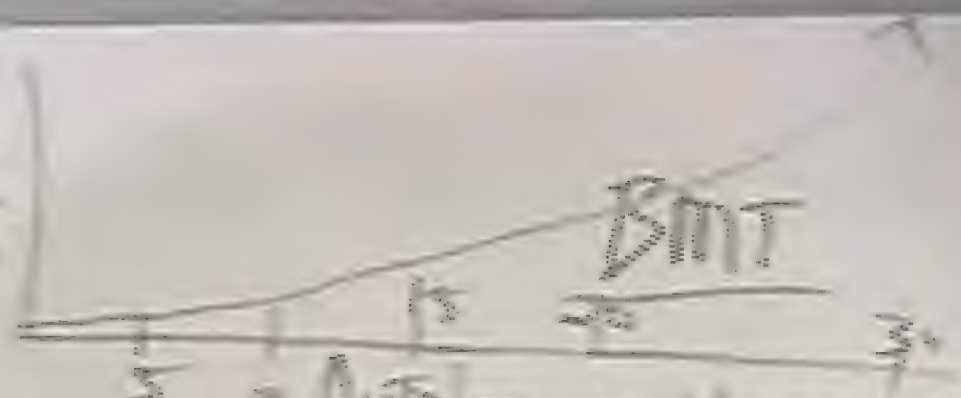
Autologous +/- Stem Cells

Logeneic Method And Related

Method & Unrelated

10%

direction ↑



Autologous \rightarrow Stem Cells
No GVHD No T-cell

Allogeneic Matched / Related

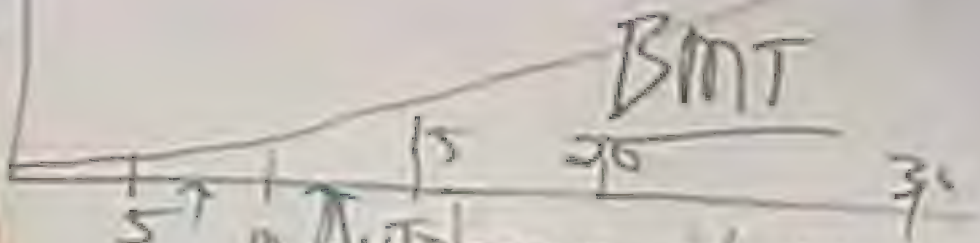
Matched / Unrelated



KAPLAN MEDICAL



disease-free survival ↑



Autologous +/- STEM Cell
No GVHD No RESJECTION

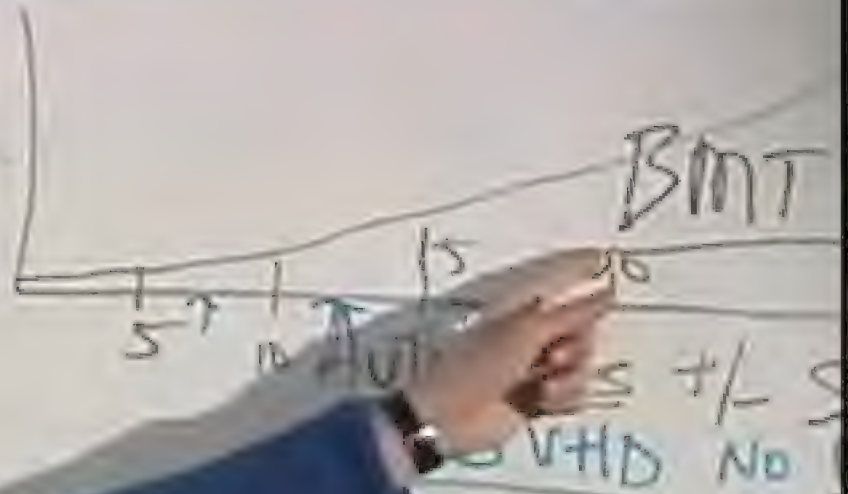
Allogeneic Method And Relative
Method Unrelated

Children
ALL

lots
oin
s
onal
CALL

Dauer
VINO
PRO

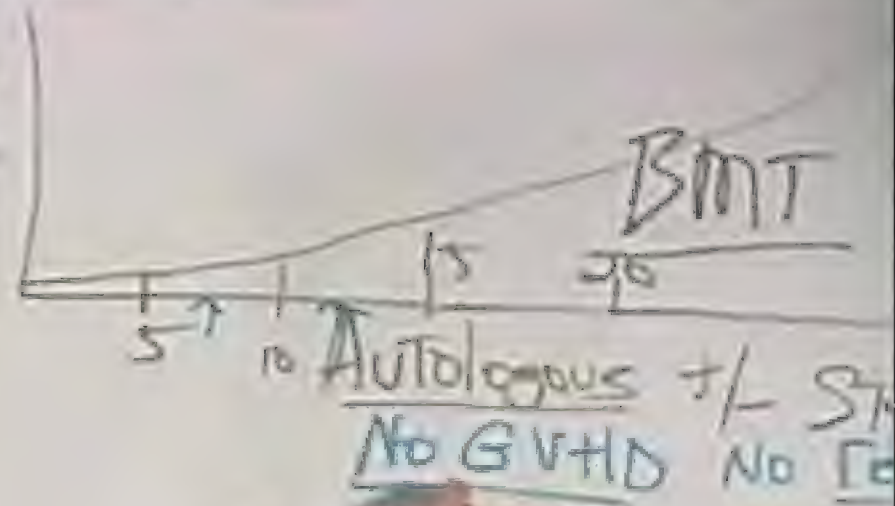
% infection ↑



Allogeneic Mat

Children
ALL

90%
cure rate



Specific Metabol
AND
Metabol

Adults

Acute Children

ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

ALL

Doxorubicin

Fluorouracil

Vincristine

KAPLAN MEDICAL

FACTS
AML

ALL

M3: DIC

M0

Tired
Anaemia
Low Platelets
Infection

M7

Blasts

Monoclonal

Myeloperoxidase
Auer rods

CALLA

~~Idarubicin~~ Daunorubicin

Daunorubicin

+ Ara-C

Vincristine

M3 Add ATRA

Prednisone

ISMT

KAPLAN MEDICAL
ISMT

Adults

AML



Acute Children

ALL

Tired
Anemia
Low Platelets
Infection

Inter

Blasts
Monoclonal

90%
infection

DOXORUBIN
VINCRISTINE
PREDNISONE

KAPLAN MEDICAL

IRMT



Adults
AML

Acute Children

ALL

M0
M3: DIC

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

Infection

M

Monoclonal
or Ab

ALL

Doxorubicin

Doxorubicin

Ara-C

Vincristine

ATP

Prednisone

KAPLAN MEDICAL

AML

ALL

Adults
AML

Acute Children

ALL

used

MS: DIC

TAKOTEC & 1
MTX

(Doxorubicin)

MSA

KAPLAN'S MEDICAL

Adults

AML

Acute Children

ALL

M3: DIC

M0

M7

Tired

ANF

Low

INF

(Korleca)

MTX

90% infection

57

39 ♀ WBC

240,000

Myelo

Acute

Leukemia

M3 Ad

KAPLAN MEDICAL

Adults
AML

13 DIC

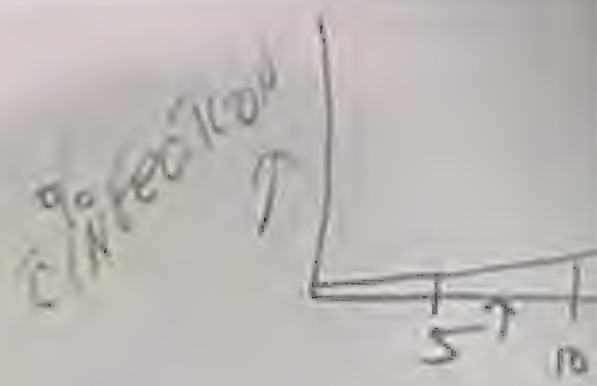
- Myelo
Auer
burr
Down

3 Ad

Acute children
ALL

Tired
Anemia
Low platelets
Infection
IBL
M

(Meca)
X



39 ♀ WBC
240,000
→ CVA - Confusion
→ Dyspnea
→ Fever

Acute Children

ALL

Tired
Anemia
Low Platelets
Infection

AML

S.DIC

M7

BL

Leukaemia

TX

do
clinical



39 ♀ WBC

240000

CLIA (conform)

SP Ne G

(ISJa)

Adults

AML

Acute Children

ALL

(M3:V1)

telomeres
telomerase

telomerase

MTX

90% infection

39 0 WBC

240000

CVA (confluent)

SP Ne 4

(isolate)

ALL

doxorubicin

irinotecan

KAPLAN MEDICAL

RMT



Adults
AML

Acute Children
ALL

Tired
Anemia
Low Platelets
Infection
Blasts
Myeloblasts

Intrathecal
MTX

CALL

Doxorubicin
Vincristine
Prednisone

KAPLAN MEDICAL

RMT

KAPLAN) MEDICAL

Adults Acute Children
AML ALL

M3:DL

Interleukin
MTX

% of
CIN fec

39 ♀ WBC

240,000

→ CVA (CON-F)

→ DYSPE

(HSDA)

Leukaphor

KAPLAN MEDICAL

Acute Children
ALL

MBD

Interleukin
MTX

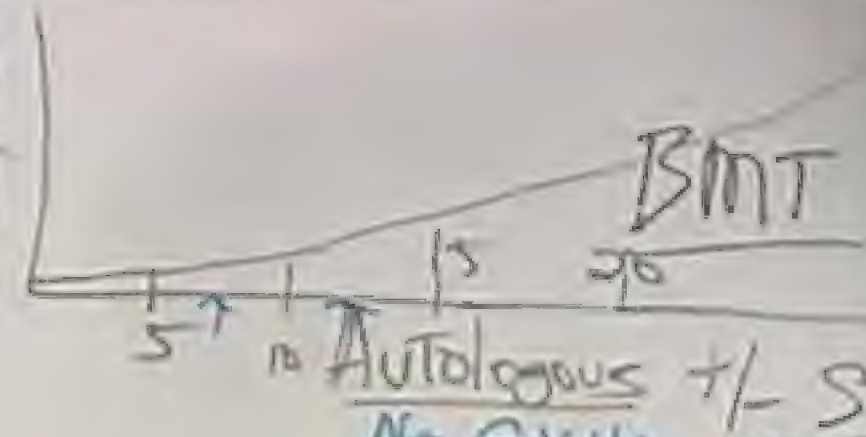
infectious?

39 g WBC
34000
CYA - common
Disseminated
visceral
Leukaphoresis

KAPLAN MEDICAL

Children
ALL

% infection ↑



39 \pm WBC
240,000
(10⁶/L)

Autologous +/- ST
No GVHD No Gr

Allogeneic Match
AND
MATCH

KAPLAN

MEDICAL

Acute Leukemia

End

Acute children
ALL

CML

C/

Tired
Anemia
Low Plate
Infection

Blast
Marrow

15
Autolog
No G

Allog

Adults AML Acute Children ALL CML

13: DIC
 M^o ANE
 Low
 T^h
 M^o T^h S
 (functional)
 Intra, MT.

mod oxidase
 Daunorubicin
 Ara-C
 ATRA
 Vincristine
 Prednisone

KAPLAN MEDICAL

Pro-T
 VEMT

Adults Acute Children

ALL

CML

CL

M3

Wired
Neuro
Platelets
FETTER
Plas

INTER
MT.

↑

ibicin
STIN

SONUP

KAPLAN MEDICAL

Adults
AML

Acute Children
ALL

AML

CL

Tired
Anemia
Low Platelets
Infection



INT.

CALL

Doxorubicin
Vincristine
Prednisone

BMT

Adults
AML

Acute Children
ALL

CML

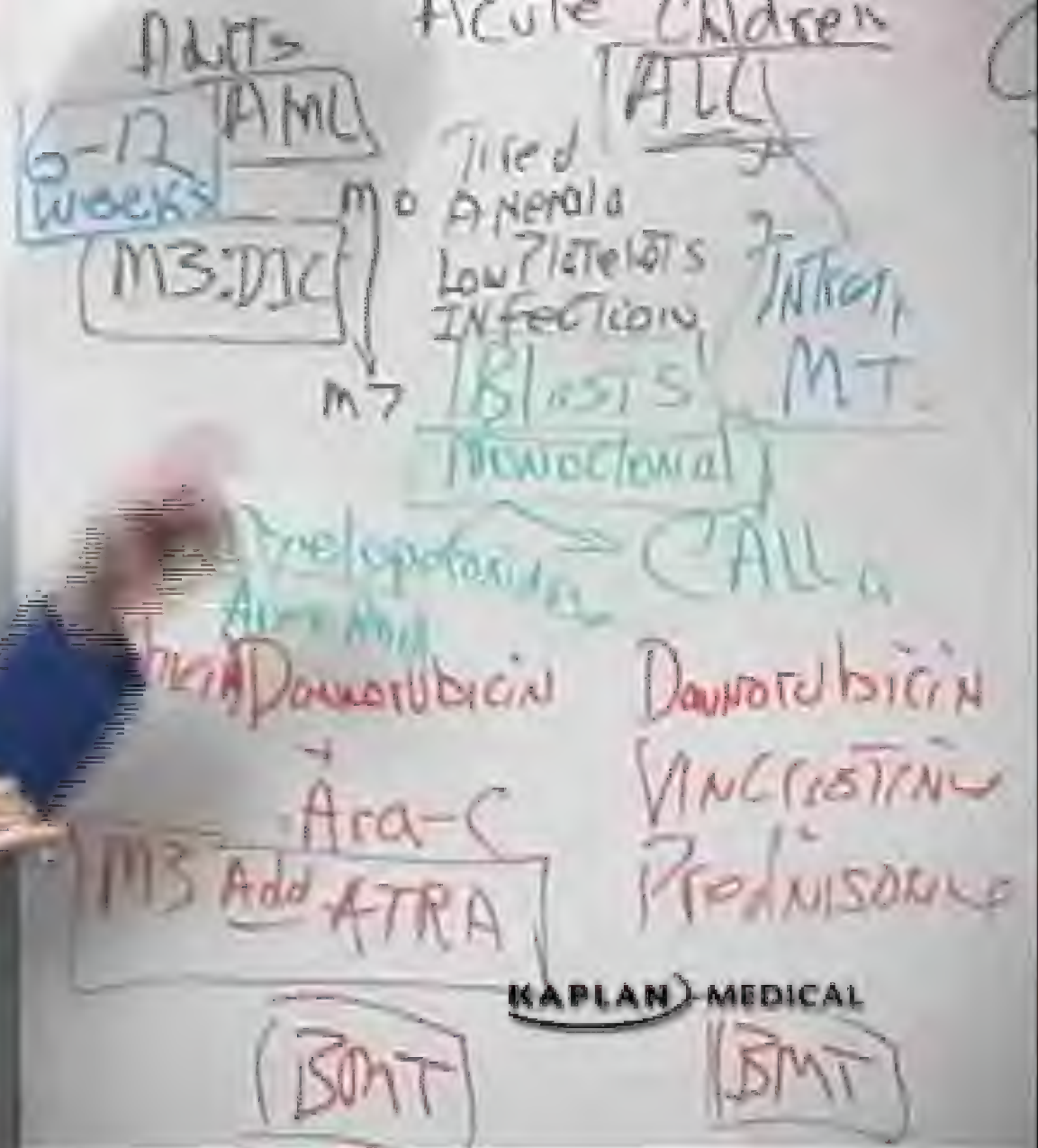
CLL

(M3:DL)

se
prol
platelets
action
S/S
Integ
MT.



DIGIN
STINW
ISONW



Children
ALL

lots of
info
s
onal
Inter,
MT.

CALL

Doxorubicin
Vincristine
Prednisone

CML

CLL

O-↑WBC

BMT

15 20

Autologous +/- S
No GVHD No

Allogeneic Marrow
A
Mat

Children
ALL

CML

CLL

0 - ↑ WBC } 10-12
1 - ⊕ Nodes } year

↑

Autologous
No GVH

lots of
ion
TS
(low)

CALL

Doxorubicin
Vincristine
Prednisone

KAPLAN MEDICAL

CML

CLL

0 - ↑ WBC³ } 10-12
1 - ⊕ Nodes } years
2 - spleen

CML

CLL

- 0 - ↑ WBC
 - 1 - ⊕ Nodes
 - 2 - spleen
 - 3 - ANEMIA
 - 4 - ↓ platelets
- 10-12 years
5

Adults Acute Children
AML ALL

6-12 weeks

(M3:DJ)

Tired
Fever
Platelets

Function

Tests

Clonal

2
Integ
MT.

CML

↑

(T)

G
IGH
MW

KAPLAN MEDICAL

Adults

Acute Children

CML

6-12 weeks
AML
(M3:1)

ALL

old

leukots

tion

st s

functional

Inter

MT.



ALL

ubicin

stinu

KAPLAN MEDICAL

Adults
AML
6-12 weeks
(M3:DK)

Acute Children
ALL

CML

CL



Integ, MT.

Children
ALL

CML

CLL

0 - ↑ WBC } 10-12
1 - ⊕ Nodes } years
2 - spleen } 5
3 - anemia }
4 - ↓ platelets } 1-2
 } years



Adults

Acute Children

CML

CLL

AML

ALL

6-12 weeks

M3/DIC

M7

- Myeloid

Acute

(Idiosyncratic) Down

+

A

M3 Add A

2/1/1/1

M-

dicin

tinu

donor

KAPLAN MEDICAL

Acute Children

ALL

CML

CLL

- 0 - ↑ WBC
- 1 - ⊕ No
- 2 - SPH
- 3 - A No
- 4 - ↓ p!

↑

CALLA

Doxorubicin

Vincristine

Prednisone

Children
ALL

CML

↑

CLL

0 - ↑ WBC } 10-12
1 - ⊕ Nodes } years
2 - spleen } 5
3 - anemia } 1-2
4 - ↓ platelets } years

ML

CLL

0 - ↑ WBC } 10-12
1 - ⊕ Nodes } years
2 - spleen } 5

↑

1-2
years

Fludarabine

CLL

CLL 0 - ↑ WBC } 10-12
1 - ⊕ Nodes } years
2 - spleen } 5

anemia } 1-2
↓ platelets } years

Fludarabine

Cytarabine

ADULTS
 6-12 weeks
 (M3:IV) → M7
 Acute children
 ALL
 Tired
 Anorexia
 Low Platelets
 Infection
 Blasts

CML

CLL

0
1
2
3
4



Acute Leukemia

ALL

CML

CLL

- 0 - ↑ WBC
- 1 - ↑ platelets
- 2 - spleen
- 3 - anemia
- 4 - lymphoma



Not typical
Leukemia's
Infection
Relapsing M.T.

CAU

Leukemia
Lymphoma
Myeloma

Adults Acute Children

6-12 weeks

AML

M3: DIC

M0

M7

Tired

Low

IN

IN

IN

IN

IN

IN

IN

IN

IN

IN

IN

IN

IN

IN

IN

ALL

CML

CLL



Myeloid

Acute

Idarubicin

Daunorubicin

+ Arabinoside

Asparaginase

M3 Add ATRA

Asparaginase

Idarubicin

Treat

ALL

ALL

ALL

ALL

ALL

ALL

ALL

ALL

ALL

ALL

ALL

KAPLAN MEDICAL

CAU

511

KAPLAN MEDICAL

Adults

AML

-12 weeks

M3: DIC

M0

M7

Acute Children

ALL

Tired

Anemia

Low?

INF

Throm

MT

CML

↑

CLL

- 0-
- 1-
- 2-
- 3-
- 4-
- 5-

Adults
 -12 weeks
 AML
 (M3: DIC)
 MT
 Acute Children
 ALL
 3
 2
 Inten
 MT.

CML CLL

47 ♂ office
 ↑ T1re
 ↑ 58

0-
 1-
 2-
 3-
 4-
 5-

Acute Children

ALL

CML

CLL

47 ♂ office
Tired
↑ 58,000 WBC
Diff → >90%
lymphs

- 0 - ↑ WBC
- 1 - ⊕ No
- 2 - SPD
- 3 - ANO
- 4 - ↓ pl
- Coa
- Sten

Diets

Acute Children
TALL

CML

6-12
wks

AML

Tired

Anorexia

Low Platelets

Infection

Blasts

Thrombocytopenia

Infection

M.T.

470 cells

↑ WBC

↑ 58,000

Diff



KAPLAN MEDICAL

Adults Acute Children
AML ALL
 6-12 weeks
 (M3:DI)

CML CL
 47 ♂ offical
 ↑ Titer
 ↑ 58,000 WBC
 → Diff → >90%

(Toluidine)

bic

KAPLAN MEDICAL

Adults

AML

Acute Children

ALL

CML

CLL

478 office

↑ T1E

↑ 58,000 WBC

>70% Neutrophils

>90% Lymphs

0-1-8

2-

3-

4-

5-

6-

7-

8-

KAPLAN MEDICAL

Adults

AML

Acute Children
ALL

Tired

Low Platelets

Infection

Blasts

Monoclonal

CALL

Doxorubicin

Vincristine

Prednisone

BMT

CML

CLL

470 off

Tire

158,000 WBC

70% Neutrophils

>90% Lymph

Reactive

KAPLAN MEDICAL



Adults

Acute Children
ALL

K-12 AML

M3: DIC

M0

M1

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

ALL

Doxorubicin

Doxorubicin

Vincristine

Prednisone

TRA

KAPLAN

MEDICAL

BMT



Adults

AML

12

B-DIC

M0

M7

Acute Children
ALL

Tired

Anemia

Low Platelets

Infection

Blasts

Monoclonal

ALLa

Doxorubicin

Vincristine

Prednisone

KAPLAN MEDICAL

BMT

CML

40

↑

>90%
neutrophils

Adults
6-12 weeks
AML
(M3)

Acute Children
ALL

CML C

4780 cells
↑ Titer
↑ 58,000 WBC

>90% Diff
Neutrophils

Reactive
Leukemia

KAPLAN MEDICAL

(BMT)

Adults

Acute Children
ALL

CML

CLL

6-12 weeks

M3: DIC

Tired
mo
Lo
I

47 ♂ office

Tire
↑ 58,000 WBC

>90%
neutrophils

→ >90%
lym

LAP

H

low

CML

active
leukemia

Adults
6-12 weeks
AML
(M3)

Acute Children
ALL

Tested
Anemia
Platelets
Infection
Blasts
(monoclonal)
CALL

CML C

47 ♂ off
Tire
↑ 58,000 WBC

>90% Neutrophils
LAP
Diff →
High

Doxorubicin Low
Vincristine CML
Prednisone

Reactive
Leukemia

KAPLAN MEDICAL

BMT

Adults

6-12 AML
WBC

Acute Children
ALL

Tired
Anemia
Low Platelets
Infection

Blasts
Monoclonal

CALL

Doxorubicin low

Vincristine CML

Prednisone

BMT

CML

CLL

47 ♂ office

Tire
↑ 58,000 WBC

>90%
Neutrophils
LAP

← Diff → >90%
lym

→ Hgb

Reactive
Leukocytosis

KAPLAN MEDICAL

Adults

Acute Children
ALL

CML CLL

6-12 weeks

AML

Tired
Anemia
Low Platelets
Infection

Blasts
Myeloblasts

ALL

Doxorubicin Low

Vincristine CML

47% off

Tire
↑ 58,000 WBC

>90% Neutrophils
LAP

>90% lymph

Hub

Reactive
Leukemoid

KAPLAN MEDICAL

5MT

Adults

6-12 AML

Acute Children
ALL

CML

Tired
Anemia
Low Platelets
Infection

Blasts
Monoclonal

Leukemia → CML

sign

Doxorubicin low

Vincristine CML

Prednisone

KAPLAN MEDICAL

BMT

470

↑ 58

>90%
Neutrophils
LAP

Acute Children
ALL

Tired
Anemia
Low Platelets
Infection
Blasts
(functional)

CML CLL

(Spleen*) 47000 WBC
Tired
158,000 WBC

79% Neutrophils
LAP
79% → 90% Lymphs

ALL
Hemoglobin Low
CRISTIN CML
15000

High
Reactive
Leukemoid

0 - TWBC
1 - Node
2 - spleen
3 - Anemia
4 - ↓ platelets
Coan
Steroid



KAPLAN MEDICAL

Adults

Acute Children
ALL

CML

CLL

6-12
WBC

AML

Tired
Anemia
Low Platelets
Infection
Blasts

Recurrent

(↑ spleen*)
(Ab pain*)

478 offical
Tire V

↑ 58,000 WBC

Diff → >90%
lymph

Leukocytes
LAP

Hgb

Reactive
Leukocytosis

CML

Imatinib
Prognosis

BMT



Adults

AML

6-12 weeks

M3/DIC

M0

M7

Acute Children
ALL

Tired
Anemia
Low Platelets
Infection

Blasts
Monoclonal

Glucocorticoids

CALL

Daunorubicin

Daunorubicin

Vincristine

Prednisone

Add

KAPLAN MEDICAL

BMT

Adults

Acute Children
ALL

CML

6-12 weeks
AML

Tired
Anemia
Low Platelets
Infection

(↑ spleen*)
(Abdominal*)

47800
↑ 158,000

→ Blasts
monoclonal

79%
neutrophils
LAP

logistics → CALL

bicin

Doxorubicin low

Vincristine CML

Prognosis

High
Reac
Leuk

KAPLAN MEDICAL

BMT

ADULTS

AM

6-12

m0

m7

Tired
Anemia
Low Platelets
Infection

Blasts

ALTI

CML

(↑ spleen*)
(Abnormal)

47 ♂ off
↑ Titer
58,000

90%
neutrophils
LAP

High
Reactive
Leukocytes

doxorubicin

INGESTION

Prophylaxis

BMT

KAPLAN MEDICAL



ADULTS

TAM

6-12

M0
M7

Tired
Anemia
Low Platelets
Infections

Blasts

Functional

relapsing
not Ad

Doxorubicin

Fluorouracil

Asparaginase

ALL

~~20%~~
year

CML

(↑ spleen*)
(Abx 2/10)

47 ♂ off
Tire
↑ 58,000

90%
neutrophils

LAP

High

Reactive
Leuk

Doxorubicin

LOW

Vincristine

CML

Prednisone

KAPLAN MEDICAL





ADULTS

6-12 AM

Weeks
(ME)

~~ALL~~ year CML

CLL

Tired
Anemia
Platelets
Leukocytosis
Blasts

High
WBC
⇒ >90
lymph

Trophoblasts
LAP
↓

High

LOW
INCREASING CML
Immunosuppression
Philadelphia

Reactive
Leukemoid

KAPLAN MEDICAL

SMT

ADTs

6-12 weeks

(M3:D)

ALT

~~ALL~~ year CML

Imatinib

CLL

Efficient
DWBC
=> >90%
lym

STs

Chromosomal

Neutrophils
LAP

Hgb

Reactive
Leukemoid

Dy. Philadelphia

KAPLAN MEDICAL

BMT

ADULTS

6-12 weeks

6-12 weeks

(M)

n

TALL

year

CML

CL

Tired

Anemia

Platelets

Infection

Blasts

Imatinib

90% response

Effect

DWBC

> 90%

Hgb

Reactive

Leukemia

CML

Dx

KAPLAN MEDICAL



ADULTS
6-12 weeks
M3:DJC
Tired
ANEMIA
Low Platelets
INFECTION
Blasts
ALL
Daunorubicin
Vincristine
Rituximab
Jmatinib
90% impro
Oral
neutrophils
LAF
Kaplan Medical
Phlebot



ALL year CML

CLL

6-12 weeks
AM

Tired
Anemia
Low Platelets
INFECTION

Blasts

Myeloid

CML

* Imatinib *
90% improve
Oral

Efficient
C WBC
=> >90% lym

TROPICALS
AP

High

Reactive
Leukocytosis

CML
Dx

Kardansone Philadelphia

BMT

KAPLAN MEDICAL



HAIRIS ALT year CML

6-12 weeks AM M3: DIC

Tired Anemia Low Platelets Infection

* Imatinib * 90% improve Oral

Blasts neutropenic LAP Hyd Reactive Leukoc

Myelogenous ALL Danzonbicin Vincristine Prednisone Phospho

Ara-C And TRA Phospho

BMT BMT

KAPLAN MEDICAL



6-12 AM
Tried ANEMIA
Low Platelets
INFECTION
Blasts
Neutrophils
ALL
word bicin
CRISTIN
NISON
neutrophils
LAP
LOW
CML
Dy
Pilot

HARLAN MEDICAL

Adults
6-12 weeks
(M3:D)

TALE year CML

* Imatinib *

90% improve
Oral

Neutrophils
LAP

Low

Phosphatase

Re

Ge

KAPLAN MEDICAL

BM



AMTs
6-12 weeks
M3/M4
M7
Tried
Ara-C
low platelets
infection
Blasts
transfusions
CALL
Doxorubicin
Vincristine
Prednisone
TRA
BMT
ALT
year
X
90
0

KAPLAN MEDICAL



ADULTS
AM

ALT

Tired
Anemia
Low Platelets
INFECTION

Blasts
Thrombocytopenia

CALL

Doxorubicin
Vincristine
Prednisone

BMT

KAPLAN MEDICAL

Adults
 6-17 AM
 Tired
 Anemia
 Low Platelets
 Infection
 Blasts
 Monoclonal
 Doxorubicin
 Daunorubicin
 STIM
 ANS
 (KAPLAN) MEDICAL
 1/2

ALT year CML
 20%
 * Imatinib *
 90% improve
 Oral
 Neutrophils
 LAP
 Low
 CML
 Dx
 Philadelphia

H
 Re
 le
 v



Adults

6-12 TAM

M3: DIC

M0

Tired

ANEMIA

Low Platelets

INFECTION

M7

IMB

TALE year

CML

* Imatinib *

50% improve

Oral

Hydroxyurea

neutropenia

LAP

ALL

Doxorubicin

+

Ara-C

Add ATRA

BMT

Doxorubicin low

Vincristine

CML

Prednisone

Phosphoric

KAPLAN MEDICAL

BMT

ADULTS

1st line

ALT

~~20%~~ year

CML

Tired

Anorexia

Low Platelets

Infection

Blasts

* Imatinib *

90% improve

Oral

Hydroxyurea

UTCAH

LAP

Low

CRN

CML

Dr

Propanisone

Philadelphia

KAPLAN MEDICAL

BMT

Adults
 6-12 weeks (M3:11)
 Tired
 mo Anemia
 low Platelets
 Infection
Loss
 NOCLONAL
 ALL a
ibicin LOW
 CML
 Dx Philadelphia
 year CML
 * Imatinib *
 90% improv
 Oral
Hydroxyurea
 neutrophil
 LAP



KARLAN MEDICAL

Tried ANemia
 Low Platelets
 Infection
Blasts
 Immunological
 Leukopenia
 Doxorubicin
 Low
 Imatinib
 CML
 Doxorubicin
 Hydroxyurea
 Philadelphia

KAPLAN MEDICAL
 B

* Imatinib*
90% improve

Оса

Hydroxyurea

ĐỀ THI THỬ THPT QUỐC GIA

LAP

Tired
Aneroid
Low Platelets
Infection

810515

FUNCTION

24

10.11.55

Review D

100%

100

10

10

7

1

Hydroxyurea

neutrophils

6. LAFF

$$L = \frac{1}{2} \rho V^2 C_D A$$

DESIGN: Qm1

(15) NW $\frac{1}{15}$

1530 - 1540

Alison & Anthony

KAPLAN MEDICAL

3

KAPLAN MEDICAL

ADULTS
[AM]

~~20%~~
[ALT] year CML

Tired
Anaemia
Low Platelets
Infection

* Imatinib *
90% improve
Oral

[Blasts]

Hydroxyurea
neutrophils

transformation

ALL

LAP

Doxorubicin Low

High

Vincristine CML

Reactive
Leukemia

Prognosis Philadelphia

[RA]

KAPLAN MEDICAL

[BMT]

ALT year CLL
 * JM *
 90%
 improve
 neutropenia
 LAP
 Low
 High
 CLL
 Dx
 Philadelphia

CLL

f/w
 DWBC
 => >90%
 lymph

- 0 - ↑ WBC?
 - 1 - ⊕ Nodes
 - 2 - spleen
 - 3 - Anemia
 - 4 - ↓ platelets
- Coomb's
 Steroid

AMLs
6-12 weeks
(M3)

ALT year

~~AML~~ CML

CLL

* Imatinib *
90% improve
Oral
Hydroxyurea
neutrophils
LAP

effort
OWBC
=> >90%
lyn

platelets
feto
SIS
functional
CALL

Hub
Reactive
Leukemia

Doxorubicin
Vincristine
Prednisone

phlebotomy
KAPLAN MEDICAL



ADULTS
 6-12 weeks
 (M3:DL)

ALT 1 year CML

* Imatinib *
 90% improve
 Oral
 Hydroxyurea
 neutrophils
 LAP

Low High
 CML
 Dx
 Philadelphia
 KAPLAN MEDICAL

Reactive Leukemia

Adults
 6-12 weeks
 (M3: D)

Tired
 Nausea
 Platelets
 (M3: D)

ALT year CML
 * Imatinib *
 90% improve
 Oral
 Hydroxyurea
 neutropenia
 LAP

(Id)

Low
 CML
 Dx
 Philadelphia

High
 Reactive
 Leukemia

CL
 Affair
 DWB
 → >

Adults
 6-12 weeks
 (M3: DIC)
 m0
 m7
 T10
 T11
 year
 CML
 * Imatinib *
 90% improve
 Oral
 Hydroxyurea
 neutropenia
 LAP
 Low
 CML
 Dx Philadelphia
 High
 React
 Leu



HANAM MEDICAL

~~20%~~
1 year CML

CLL

0 - ↑ WBC } 10-12 years
1 - ⊕ Nodes }
2 - spleen 5

* Imatinib *
90% improve

3 - anemia } 1-2 years
4 - ↓ platelets }

Oral
Hydroxyurea
neutrophils

Coarbo's
Steroids

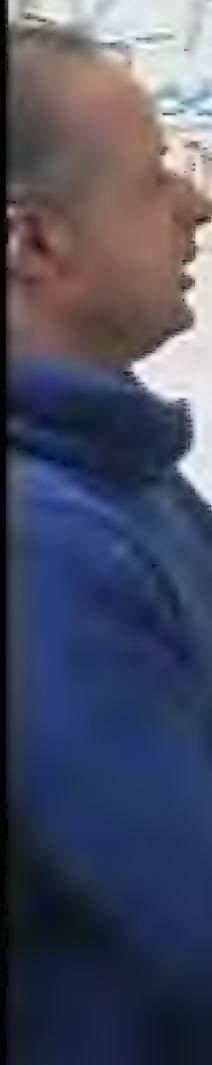
Allo < 5

AUTO SC

HARLAN MEDICAL



Ts
 AM
 m
 DIC
 m
 ALT year CML
 * Imatinib *
 90% improvement
 Oral
 CML
 Ph
 CLL
 0 - ↑ WBC
 1 - ⊕ Node
 2 - spleen
 3 - Anemia
 4 - ↓ platelets
 Coar
 Steroid
 >90%
 lymph
 Reactive
 Leukemoid
 Phlebotomy



DARTS

AM

ATI

year

CML

CLL

* JAK2iib *

90% improve

Deaf

Hydroxyurea

neutropenia

LAP

* JAK2iib *

0.6% improve

⇒ 29% lymph

lymph

low platelets
low neutrophils
low hemoglobin

(Blasts)

transfusions

- Abnormalities

Amplification

Deletion

Translocation

Chromosomal

Abnormalities

CAU

Deletion

Translocation

Chromosomal

Abnormalities

Low

CML

De

Phosph

Abnormalities

High

Relative
Leukocytosis

KAPLAN MEDICAL

ADULTS

6-12 AM

Tired
Anemia
Low Platelets
Infection

Blasts

Functional

ALL year CML

* Imatinib *

90% improve

Oral

Hydroxyurea

neutropenia

LAP

CAUG

Daughter

ON

CML

Dr

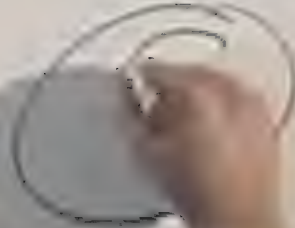
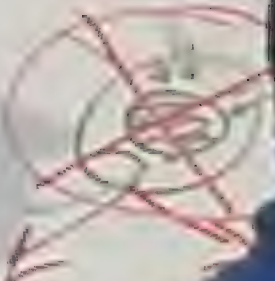
Philadelphia

KAPLAN MEDICAL

VRMT

Aplastic
anemia

CD11
CD30



<50

fMach

BMT

2nd

Aplastic
anemia

WBC



50

500

no match

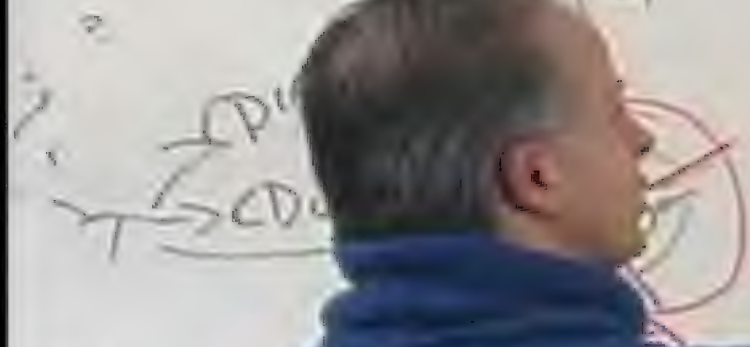
* Cyclosporine

* Anti-thymocyte

Globulin

KAPLAN MEDICAL

Aplastic
anemia



shot
1/10

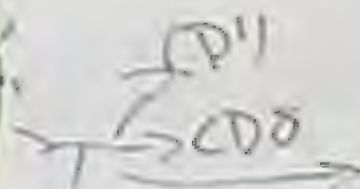


CD4/CD8
MD Ex 10
N-

200

Aplastic
anemia

Plasma



<50
Match

BMT

>50

No match

* Cyclosporine
* Anti Thymocyte
Globulin

KAPLAN MEDICAL

Acoustic
Monitoring

Plasma Cell \rightarrow Ig G, Ig A \rightarrow



KAPLAN MEDICAL

Acute
Leukemia

Allogeneic HSCT →

CD11
CD20

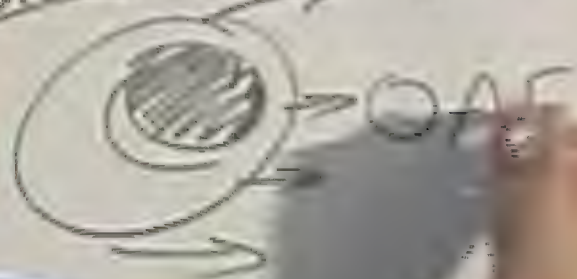


<50
+ match

BMT

Plasma I_0 $6, I_0 A \rightarrow 10$ 11 11

IsaCell $\rightarrow I_{NaP}, I_{NaA} \rightarrow$ "M-Spike"
STEP



OAF

ASTIC
GPII/IIIa



>50%
No match

* Cyclosporine
* Anti Thymocyte
Globulin

Plasma cells to G, IgA → "M-Spike"
STEP
AF → Bones ↑



Aplastic
Anemia

Plasma Cell



5000
no match

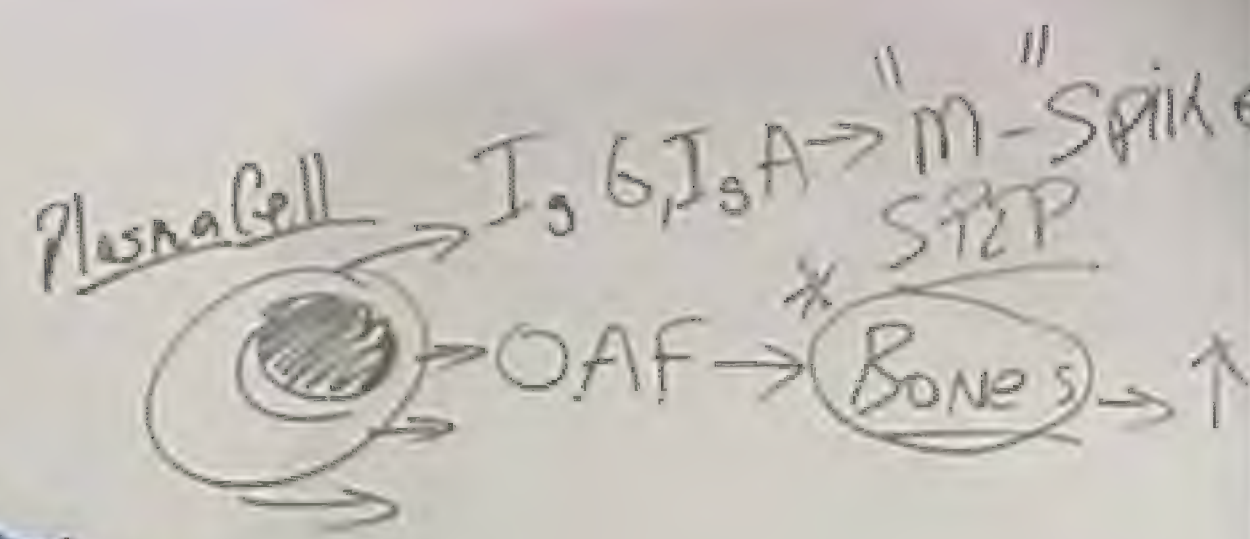
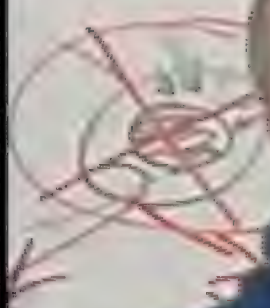
Cyclosporine

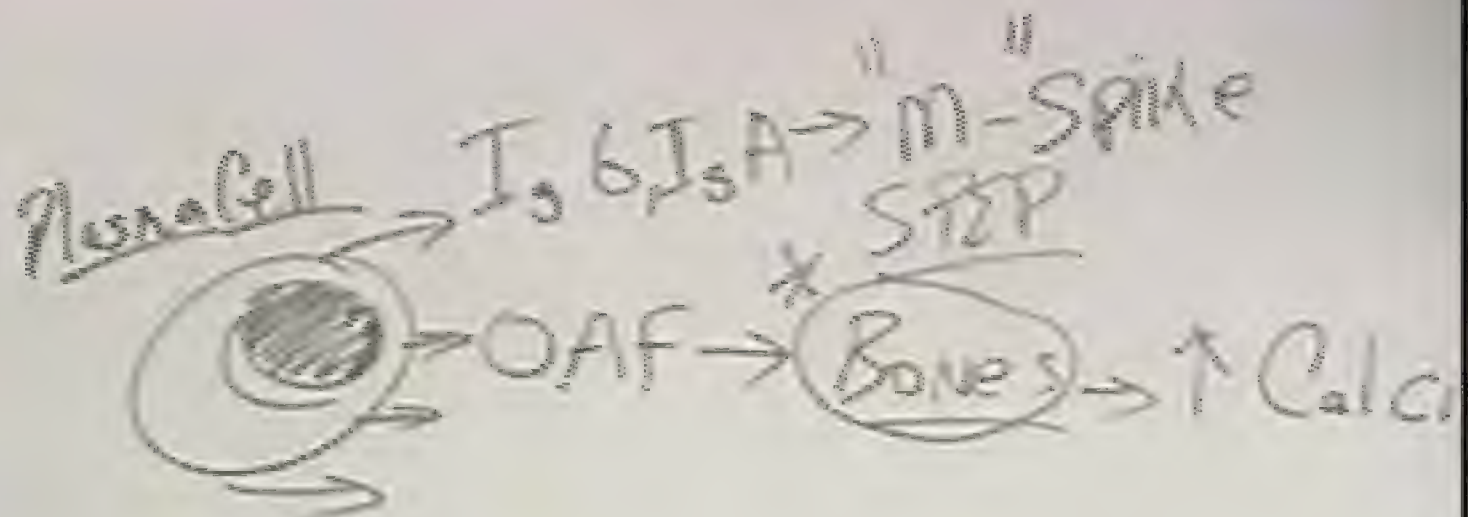
Thymocyte

Stimulation

KAPLAN MEDICAL

Plastic
nerve





Aplastic

neutropenia

LDH

> 500

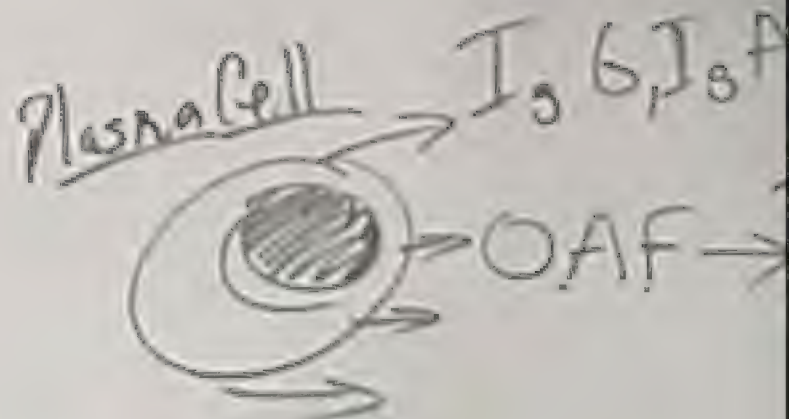
Relat

Allo

< 50

+ Match

BMT



Aplastic
Anemia

CD11
CD8

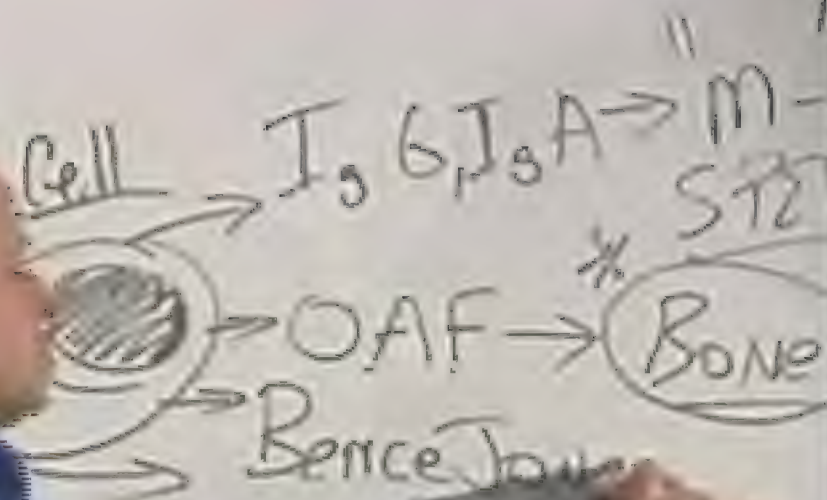


<50
+ Match

BMT

>50
No Match

* Cyclo
+ Anti



Acute
Leukemia



50

5000

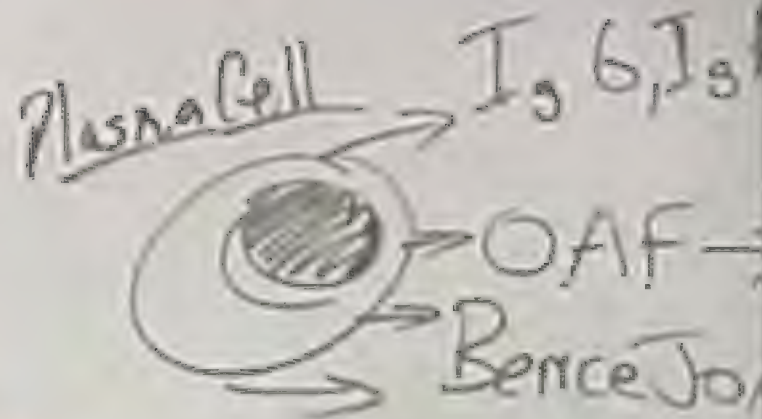
No match

*

Cycle

Cycle

globulin





APRIL 4

NBC



SDS
No match

Cyclosporine
T-cell

Biotin

KAPLAN MEDICAL



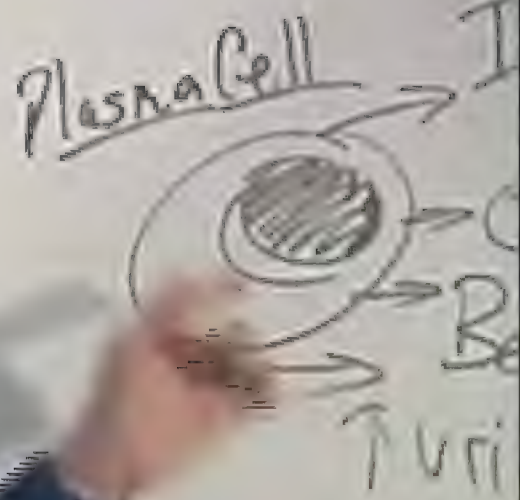
2nd

Aplastic
Anemia

WBC → T → CD

Platelet

5000
match



Sibutin

KAPLAN MEDICAL

Aplastic
Anemia



Plasma Cell → Ig G, A
→ OAF
→ Bence
→ ↑ VFC Ad

Immun
* Cyclosporine
+ Anti Thymocyte
Globulin →

KAPLAN MEDICAL

$I_0, G, I_0 A \rightarrow$ "M-Spike"
STEP

\rightarrow OAF \rightarrow \uparrow Calcium

PROTEIN \rightarrow Renal

Red

APLASTIC
ANEMIA

WBC ↓

Platelets ↓



5000
match

DOSE/INW
IMMUNE

KAPLAN MEDICAL

PLASMA

Aplastic

Anemia

CD11
CD8

Plasma Cell → Ig G, Ig A → "M"
ST
*
OAF → (Bon)
Bence Jones P
↑ Uric Acid

KAPLAN MEDICAL

Acoustic
= noise

PlasmaCell

WBC

Platelet,
Allo

SDG

Thymocyte
S10

KAPLAN MEDICAL

Acoustic
Amplification

>10%
Plaque

Cell → IgG, IgA → "M"
ST
*
OAF → (Bon)
Bence Jones Protein
↑ Uric Acid

POB/NL
MD/Ex/IO
lin

Aplastic
Anemia



506

>10%

Plasma Cell

IgG, IgA → "M-
STZ"



OAF → * (BONE)

Bence Jones Protein

Uric Acid

Auto Hemolytic
Globulin

>10%
 Renal Cell → IgG, IgA → M-Spike
 → SLP
 → OAF → Bone → ↑ Calc
 → Bence Jones Proteins → Reveal
 Uric Acid

10%
Flash

$I_{\alpha} 6, I_{\alpha} A \rightarrow$ "m-Spike"
STEP

Kidney

AF \rightarrow Bones \rightarrow \uparrow Calcium

ence Jones Protein \rightarrow Renal
Acid

2nd

APLASTIC
ANEMIA

> 10%
Plasma Cell

WBC

Plasma



506
no match

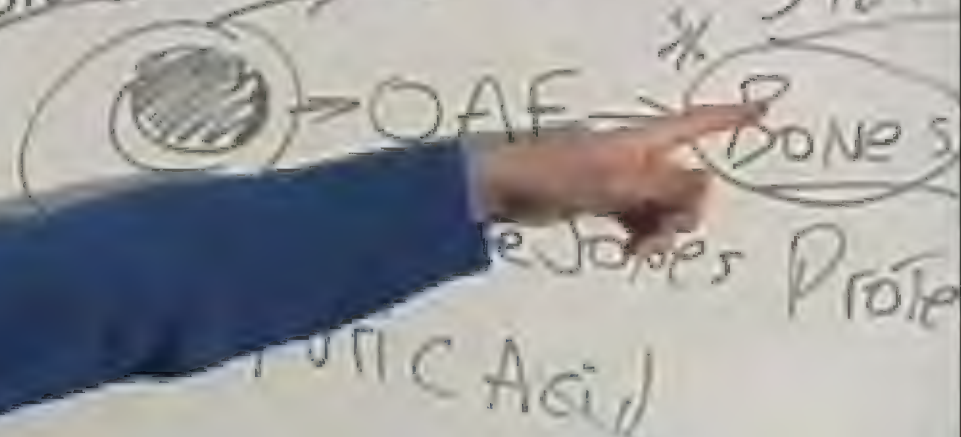
leukopenia
lymphocyte
neutrophils

KAPLAN MEDICAL

Agglutination

>10% Myeloma
Plasma Cell → Ig G, Ig A → "M-S"

"
STEP



Aplastic
anemia

>10% Myeloma
Plasma Cell

IgG IgA → "M" "S"
ST2P

→ * Bone

Sence Jones Protein
Tunic Acid

APOLYTIC
NHL

> 10%
Plasma

LDH
→ CDO



5500
no match

* Cyclosporine
* Anti-thymocyte
KAPLAN MEDICAL
Stobulin



Aggressive
Neoplasia



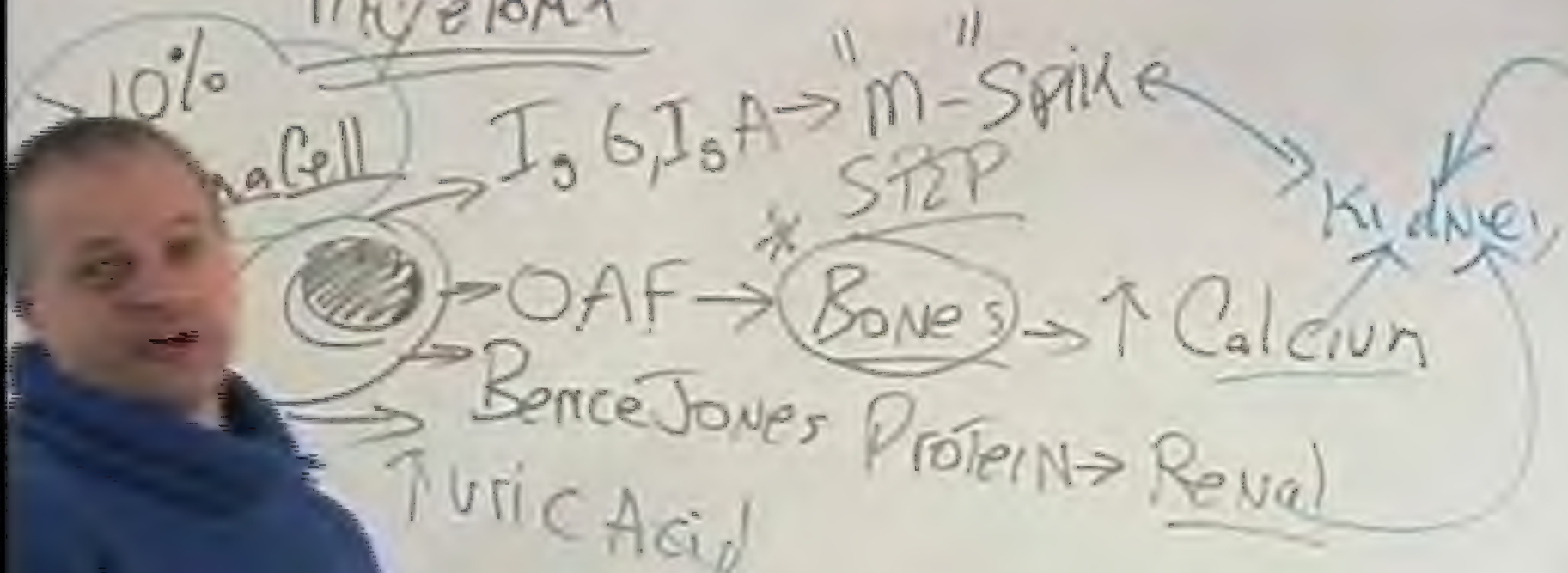
>50%
No match

* Cyclosporine
+ Anti Thymocyte
Globulin

>10% Myeloma
Plasma Cell → Ig
→ O
→ Ben
→ Tumor

KAPLAN MEDICAL

Myeloma



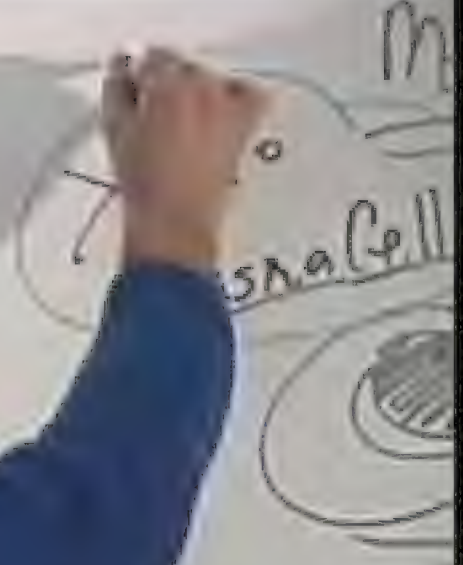


Red

Acoustic
Neur G

WBC

Platelet
Allo



OSPDI/NU

THMO CYTO

KAPLAN MEDICAL

Aplastic

anemia

CD11
CD35

* Myeloma
70% Plasma Cell

IgG, IgA → "N"

OAF → (Bo)

Jones P

Acid

CD11c

N-

KAPLAN MEDICAL

Myeloma

710%

$I\alpha$ $6I\alpha A$

"M-Spike"
STEP

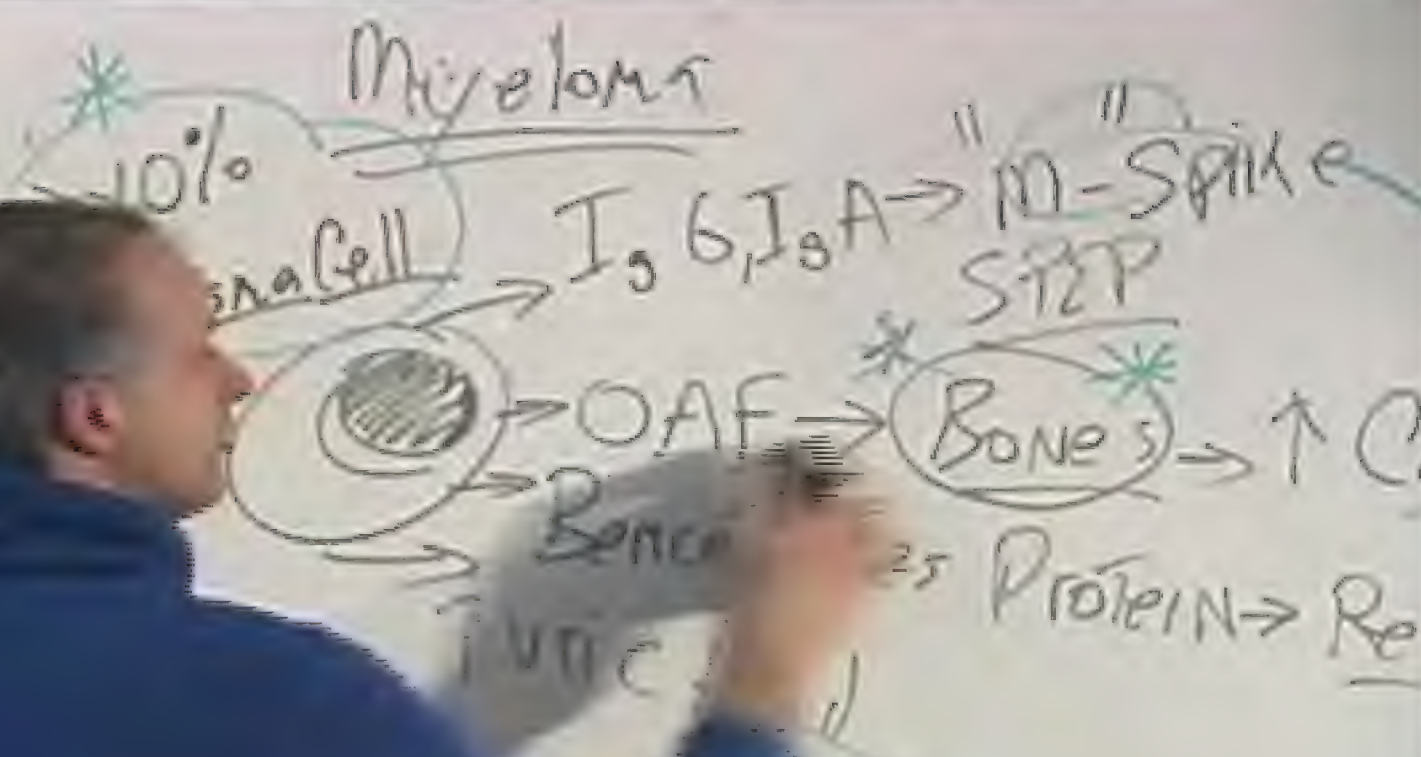
OAF

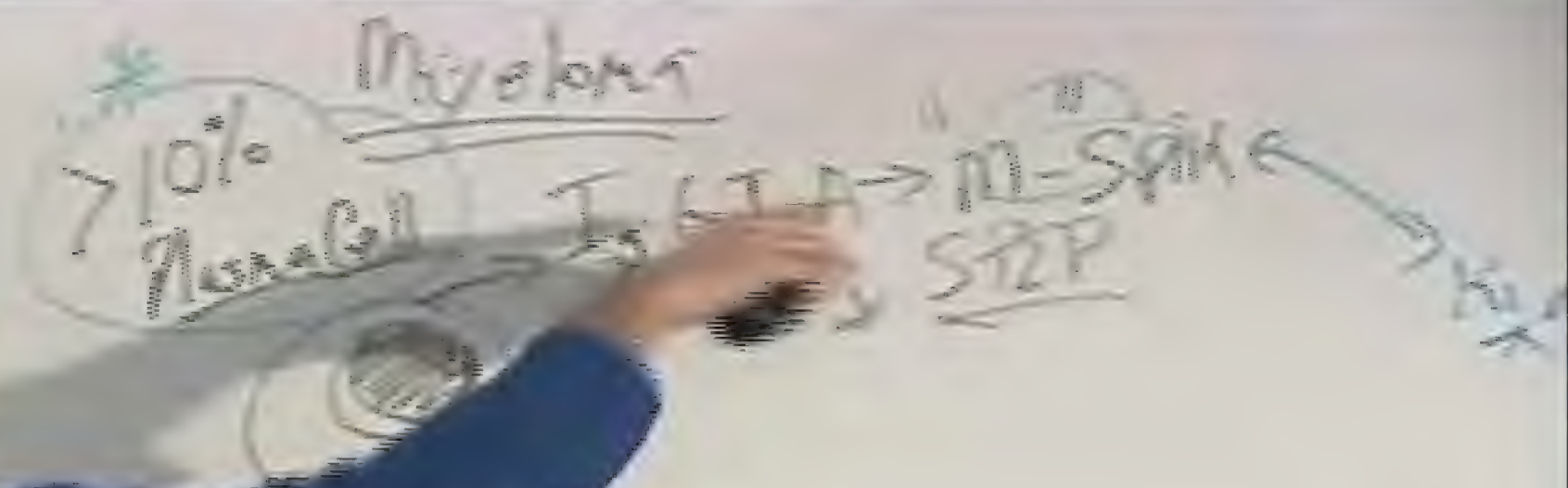
Bone Marrow

↑ Ca^{2+}

Protein → Renal

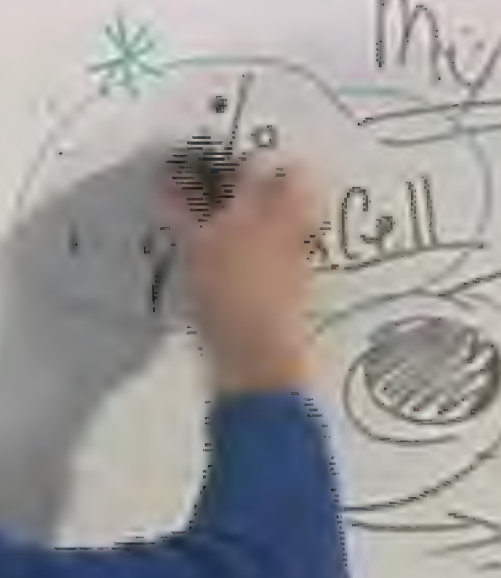
STIC
alg





Adenocarcinoma
Adenocarcinoma

Myeloma

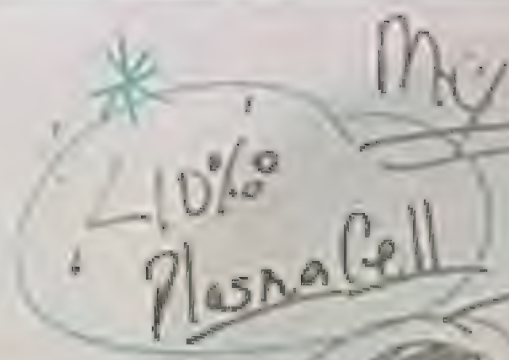


I, 6, I, 8 A → M-Sp
STEP

Adenocarcinoma
Adenocarcinoma
Adenocarcinoma

Aplastic
monoclonal

CD11
CD3



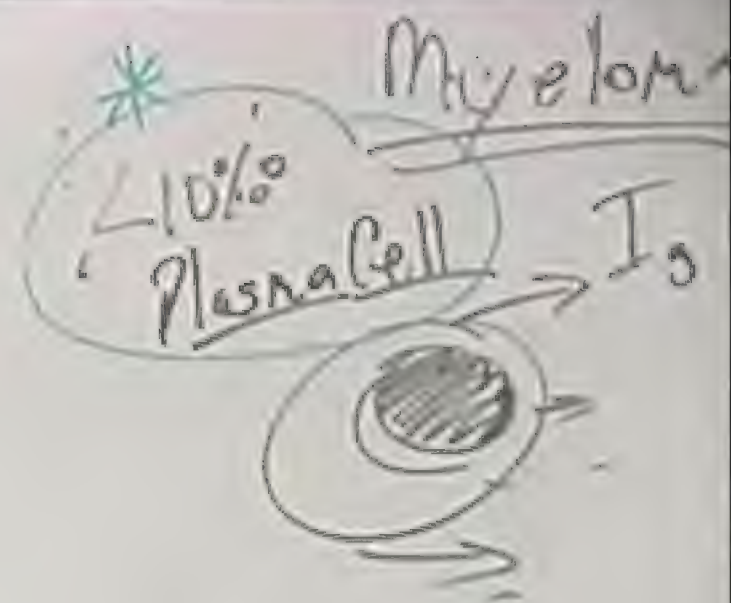
Myeloma

IgG, IgA → "M"
ST2



monoclonal
antibody
protein

Aplastic
Anemia



>50%
malignant

cytotoxic
immunoglobulin
antibody

KAPLAN MEDICAL

RBC

Aplastic
Anemia

*
40%
Plasma

WBC



Platelet

5000

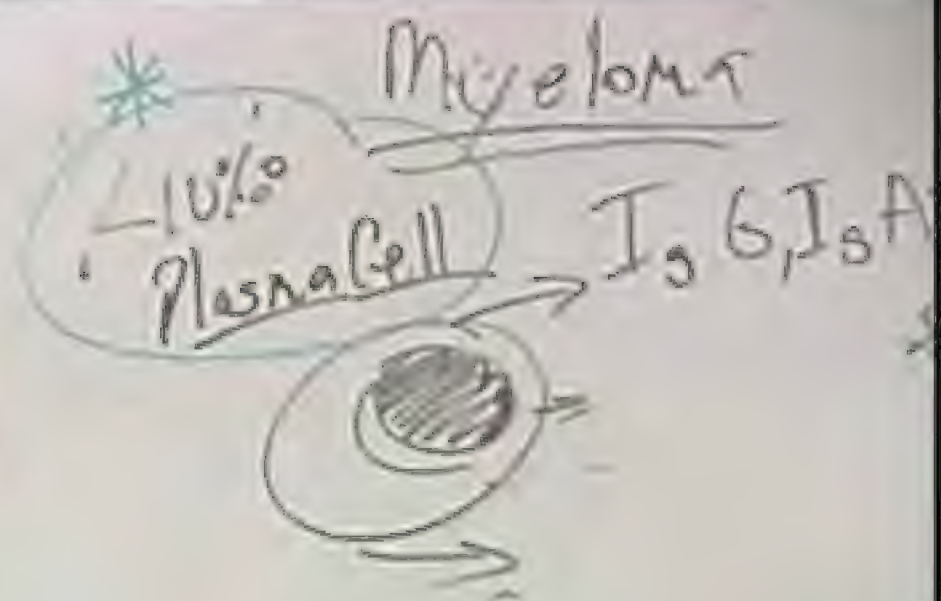
7d

osporin

Immunocyte

KARLAN MEDICAL

Aggressive
MM



CD11
CD20

relat, Allo
<50%
+match
BMT

CD11c
CD138
CD138/CD138
CD138/CD138

Myeloma

*
10%
Plasma Cell

→ IgA → M-Spike
STEP

↓
NEGUS
NOR

5000
match

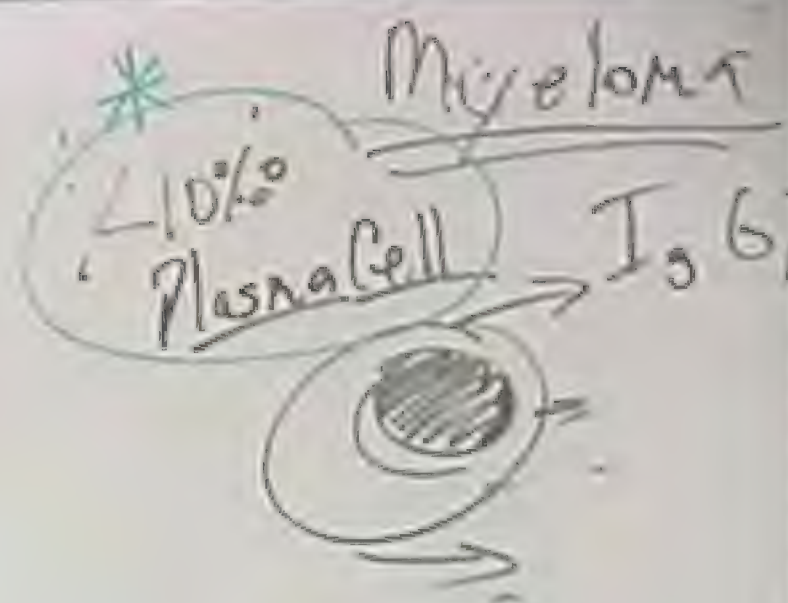
cytospin
thymocyte
Biotin

Aplastic
neutrophils



50%
match

closporine
thymocyte
butlin-



Amoxicillin
1000

500

<50

Amoxicillin

BMT



>50

Amoxicillin

* Cyclo

Amoxicillin

(5)



Myeloma

Cell

$I_s, I_b, I_sA \rightarrow$



Myeloma

40%
75%

$I_{\alpha} 6, I_{\alpha} A \rightarrow$ "M-Spike"
STEP

MGUS 1-2%

50%
match

clozapine
the immunosuppressant
GloboLin

RBC

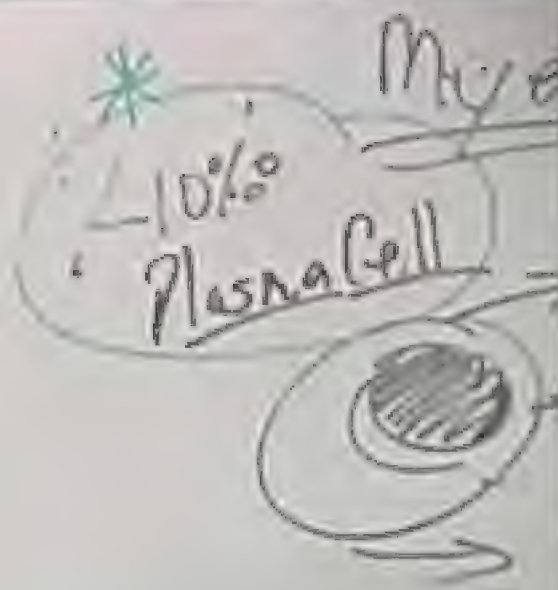
Acute
lymphocytic

WBC \rightarrow CD11
 \rightarrow CD8

Platelet
Allo

< 1000
match

disproportionate
immune



Myeloma

Aplastic
Neur G

Myeloma
*
40%
Plasma Cell

Ig G, Ig A → "M-Spin"
STEP

MGUS
NORx

<70

AUTO
STOMACH

Aplastic
Anemia

CD11
CD8



55060

No match

* Cyclosporine
+ Anti Thymocyte

KAPLAN MEDICAL
Slobutin

Red

Aplastic
Anemia

WBC → CD11
→ CD5

Platelet
All



5000

DE/INL
AND CYT
UTIN

Myeloma
*
40%
Plasma Cell → IgG

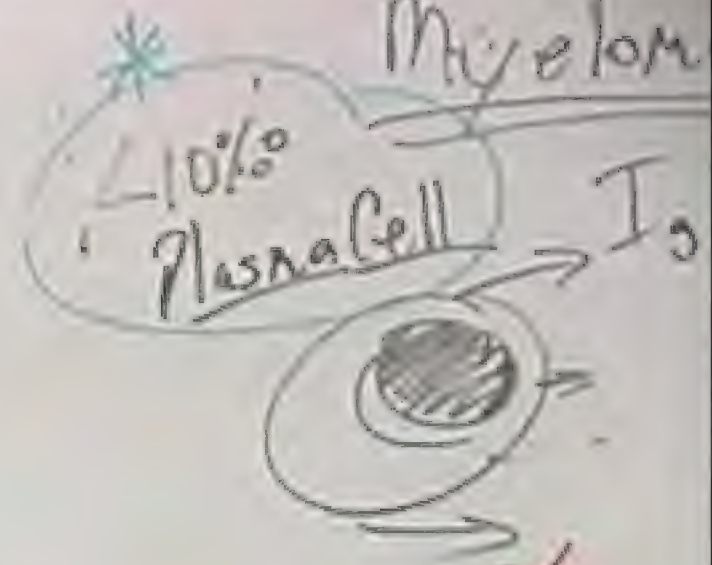


<70

AUTO
STOMACH

KAPLAN MEDICAL

Myelom



<10%
Plasma Cell

Ig

<70

Auto
Stomach

Aplastic
Anemia



>50%
match

closporine
Thymocyte
butin

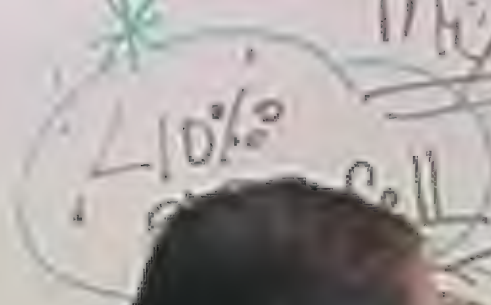
KAPLAN MEDICAL

RBC

WBC

Plate

HLA
Anti G



Myeloma

$I_0, I_0 A \rightarrow$ "M-
ST2"

NG
N



CD8

<50

Match

BMT

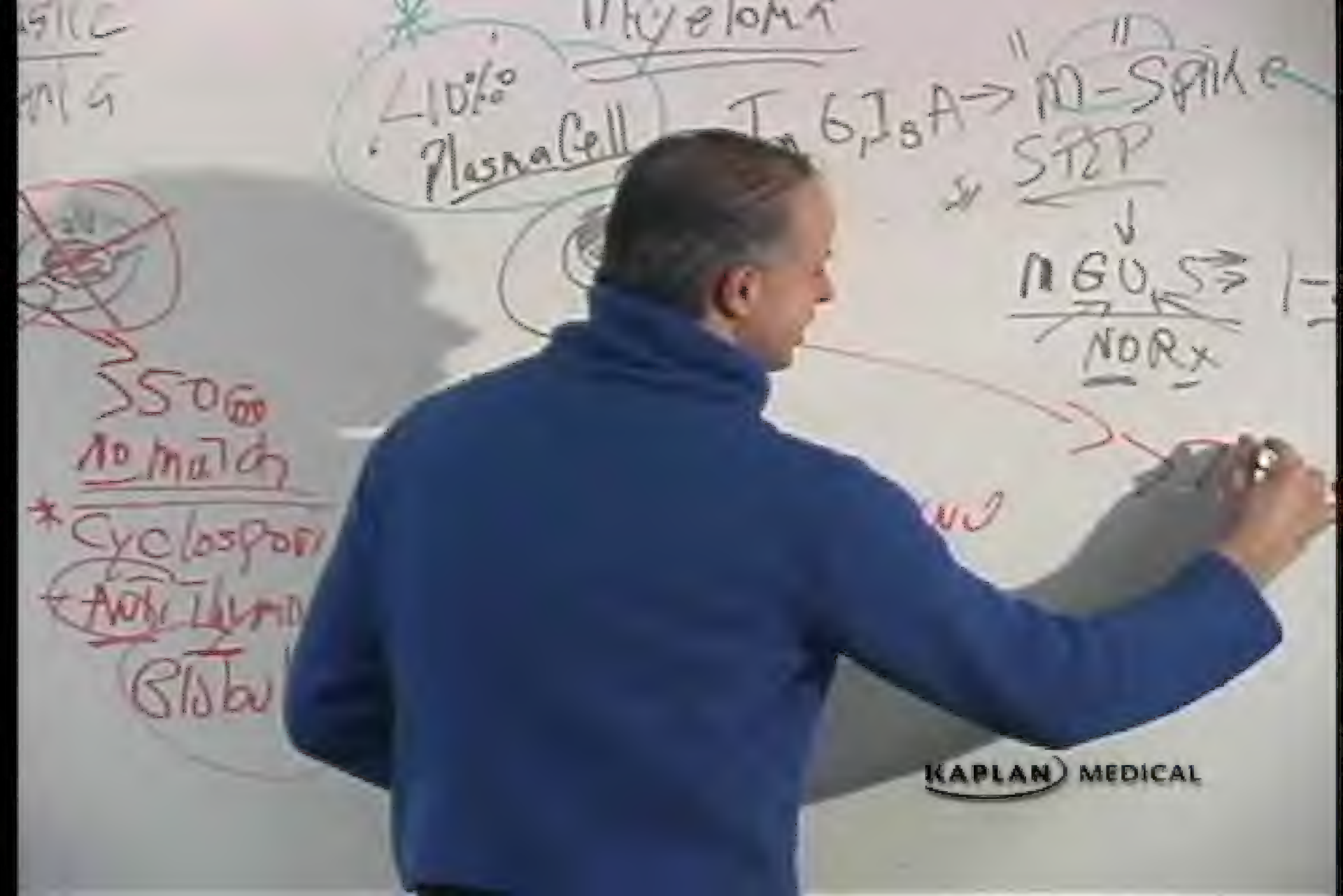
>50

No

* C

+

Yinc
A



40%

Plasma Cell

Myeloma

To 6, 1, 5 A -> "M-Spike"
STEP

NGU, S -> 1 =
NORx

55000

No match

* Cyclosporin

Anti Tumor

Globu

KAPLAN MEDICAL

Myeloma
 2-10% Plasma Cell
 6, 7, 8A → M-Spike
 STEP
 ↓
 10-20% → 1-2% Myeloma
 NORx

> 70
 ↓
 HbA1c

11% Myeloma
 0%
 Plasma Cell \rightarrow IgG, IgA \rightarrow "M-Spike"
 C55P



\Rightarrow 1-2% Myeloma
 \Rightarrow Rx

< 70
 > 70
 ADT \rightarrow fragile
 S

2nd

Acoustic
nerve

410%
Plasma

WBC



P/a

500

itch

205/114

syto

Av

57

KARLAN MEDICAL



Myeloma

10%

IgG, IgA

STEP

160,5
NORx

1-2% Myeloma

70

Health

trazodone

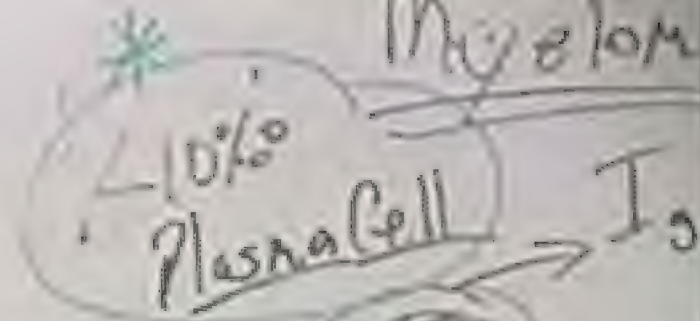
Melphalan

Thalidomide

KAPLAN MEDICAL

Acute
Allo

Myelom



WBC

Platelet
Allo



Immunoglobulin
Stimulin

Stimulin

KAPLAN MEDICAL



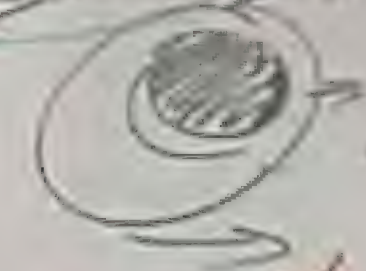
WBC
Platelets
Hemoglobin
Albumin



5500
No match

Cyclosporine
Anti-lymphocyte
Globulin

40% Plasma Cell
IgG



<70

AUTO
Stem cell
Yucca
Add
Dev



Normal
Normal

410%
Plasma

CD11
CD8



500
No match

Cyclosporine
Immunocyte
Stimulin

KAPLAN MEDICAL





Apoptotic
Apoptosis

Ma
* $<10\%$
Plasma Cell



$>50\%$
No match

* Cyclosporine
Anti Immocyte
Gloabulin

<70
Auto
Stroke

KAPLAN MEDICAL

APLASTIC

40% Plasma Cell

WBC

Platelets

5500

no match

cyclosporine

Anti Thymocyte

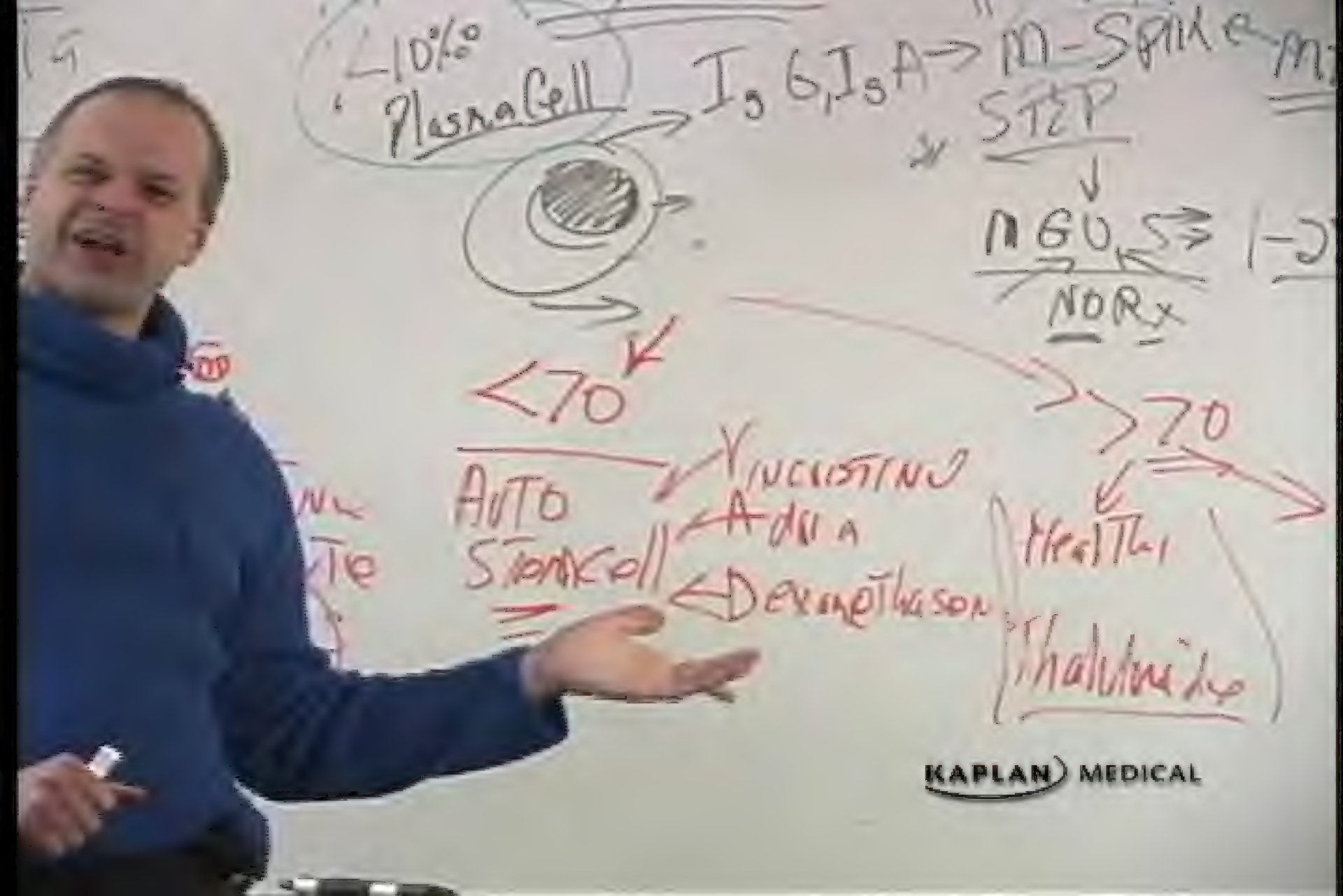
Globulin

KAPLAN MEDICAL

<70

AUTO

STROKE









Aggressive
NHL G

Myeloma
40%
Plasma Cell

IgG, IgA →



<70

Auto
Stomach
Vincristine
Adriamycin
Dexamethasone



KAPLAN MEDICAL

CLL

KAPLAN MEDICAL

CLL

CLL

KAPLAN MEDICAL

CLL



KAPLAN MEDICAL

CLL

ALL \rightarrow Blasts

CLL → Smeared → Normal

ALL → Blasts

CLL → Smeared → NO (Ac)

ALL → ?

→ Smear → Normal

320

→ Blasts

ET → NO/Aa)

32 ♀ Neck Mass

not warm, red, tender

KAPLAN MEDICAL

meat → NO/NA/

STs

32 ♀ Neck Mass
NOT warm, red, tender
Exertion

CLL \rightarrow Smeared \rightarrow NO (Ac)

ALL \rightarrow B

32

NOT

Ex

KAPLAN MEDICAL

CLL → Smear → NO (NA)

ALL

32

NOT

EX

KAPLAN MEDICAL

CLL → Smeat → NO/LA

→ LA S

32

NOT U

Exc

LL \rightarrow Sweat \rightarrow Normal

LL \rightarrow blister

32 ♀ Neck Mass
Not warm, red, Tender
Excisional Biopsy

CLL → Smeared → NO/NA

ALL

32 ♀ Neck M
NOT warm, red
⇒ Excisional B

⇒ NO (NA)

32 ♀ Neck Mass
NOT Warm, red, Tender
⇒ Excisional Biopsy

heat \Rightarrow NOI/A

STS

32 ♀ Neck Mass

NOT WARM, red, Tender

Excisional Biopsy

CLL → Smeared → Normal

ALL → Blasts

Stage

32 ♀ Neck M
Not warm, red,
⇒ Excisional B

CLL \rightarrow Smear \rightarrow NO/Ac

ALL \rightarrow Blasts

Stage
Radiate { I
II
III
IV

CLL \rightarrow Smeared \rightarrow NO/NA

Blasts

$\left\{ \begin{array}{l} \text{I} \\ \text{II} \end{array} \right.$

CLL \rightarrow Smeat \rightarrow NO/A+

ALL \rightarrow B

Stage
Rachet

Chem

30
NO
 \rightarrow C

CLL → Smeared → NO/NAI

ALL → Blasts

Taget
Radiation { I
II

chemo { III
IV

CLL → Smear → NO (Ac)

AL

Tag

Out

32 ♀
NOT w
→ EXC

CLL → Smear → Normal

ALL → Blast

Stage
out

32 ♀
NOT w
→ Exci

CLL → Smear → NO (Ac)

ALL → Blas

Stage
P₁

32 ♀
NOT w
→ EXC

CLL \rightarrow Sneaky Kolmer

ALL

Sign

32

101

\rightarrow EXC

KAPLAN MEDICAL

Neck Mass

m, red, Tender

van / Bro



Neck Mass

m, red, tender

lymph



KAPLAN MEDICAL

CLL → Smear → NO (No)

→ Blasts

CLL { I
II

CLL \rightarrow Smear \rightarrow NO/NA

L \rightarrow Blasts

lymphocyte
Radiate { I
II

hemo { III
IV

ALL
ALL \rightarrow Blasts

Stage

III

1st to 3rd

KAPLAN MEDICAL

NOT
 \Rightarrow Ex

CLL \rightarrow Smear \rightarrow NO/NA

Blasts

Stage { I
II

III

IV

ANY STAGE C B SYMPTOMS

KAPLAN MEDICAL

CLL \rightarrow Smear \rightarrow No/Ae

ALL \rightarrow Blasts

Stage $\left\{ \begin{array}{l} \text{I} \\ \text{II} \end{array} \right.$

Chemo $\left\{ \begin{array}{l} \text{III} \\ \text{IV} \end{array} \right.$

Any stage c' B'sym?

KAPLAN MEDICAL

CLL → MEAT → NOISE

→ Blasts

→ I

→ Symptoms

KAPLAN MEDICAL

CLL \Rightarrow neoplasm non-Hodgkin

L \Rightarrow Blasts

Stage { I - ONE node
II -

IV
ANY SITE

KAPLAN MEDICAL

CLL → MEAT & NONE

→ Blasts

Radiate

I_a - ONE Group

II_a Two Groups

III Both sides of I

IV

Stage C B's symptoms

CLL → MEAT & NO

ALL → Blasts

Stage
Radiate { I_a - ONE 6
II_a Two

Chemo { III Bot
of D₁
IV
ANY STAGE



CLL \rightarrow Med \rightarrow Non

ALL \rightarrow Blasts

Stage \rightarrow St \rightarrow RE \rightarrow ONE GROUP

II TWO GROUPS

CHROMO \rightarrow III BOTH SIDE OF DIAPHRAGM

IV ANY STAGE C B SPART

KAPLAN MEDICAL

CLL \rightarrow Smeared \rightarrow Not AA

AL

Sign \rightarrow ONE GROUP

GROUP 1

H₂O

SM.

ne to ARTICULATIONS

KAPLAN MEDICAL

So \neq

Not w

\rightarrow Exa

CLL \rightarrow SMEAT \rightarrow NO (No)

ALL \rightarrow S

Stage Ia - ONE GROUP?

32 ♀

NOT w
 \rightarrow EXCI

KAPLAN MEDICAL



KAPLAN MEDICAL

Smear → NO/NA

32 ♀ Neck Mass
NOT WARM, red, Tender
⇒ Excisional Biopsy
Chest, abd, pelvic CT

ONE GROUP

GROUP 5

BC SYMPTOMS

KAPLAN MEDICAL

CLL → Smear → NO/NA

ALL →

Fig- -ONE group?

GROUP 1

side,
phagm.

13 SYMPTOMS

KAPLAN MEDICAL

So
NOT
→ Ex
Che
BONE

CLL → Smeat → NO/NA

ALL

Sign - DNE group

32 ♀ Ne

NOT L

EST, N/A
DNE Marro

45/100
10/100

se c' B's M T (KAPLAN) MEDICAL

CLL → Smeat → NO/NA

ALL

One blow?

HD

32 ♀ M

NOT warm

= Excision

Chest, Ab

Bone Marrow

Both sides
of Diaphragm.

T 50 C 1 B 3/4 R 10/45

KAPLAN MEDICAL

CLL \rightarrow Smeared \rightarrow NO/NA

HD

ALL \rightarrow Blasts

Heart \rightarrow Adria
B

Stage

Radiate

I - ONE GROUP V
D

II - Two groups

III - Side, diaphragm

IV

Any stage c

(KAPLAN) MEDICAL

5 options

32

NOT

\rightarrow CX

Ch

Some

CLL \rightarrow SMEAT \rightarrow NO/NA

ALL

HD
Heart \rightarrow Adria

B Leomp

ONE GROUP V

D

GROUP 1

32

NOT

\rightarrow EX

Ch

ONE

KAPLAN MEDICAL

TYPE C 15/11/1845

2 ♀ Neck Mass
Warm & Tender
Excisional Biopsy
AST, ALT, ALP, GGT
Marrow



CLL \rightarrow Smear \rightarrow No/Ae

HD

32

NOT

A \rightarrow T5

Heart \rightarrow Adria

Lungs \rightarrow B Leomycin

\rightarrow Ex

Ch

Bone

I - ONE GROUP V
D

Two GROUP

Ortho side,
Diaphragm.

(KAPLAN) MEDICAL

\rightarrow IS SP/AT 1845

CLL → SMEAR → NO INCL

HD

32

NOT

ALL → Blasts

Heart → Adria

Lung → Leomycin

→ Ex

Ch

Some

Stage
I - DNE
II - DNE

I - DNE
II - DNE
V
D

Two groups

MEMO

III Both sides
of Diaphragm.

IV

Any stage c/s symp

(KAPLAN) MEDICAL

CLL → SMEAR → NO INCL

HD

32 ♀
NOT w

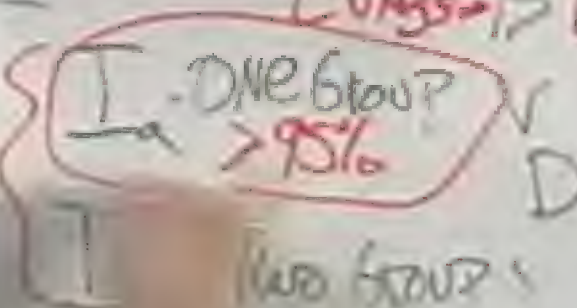
→ BLASTS

Heart → Adria

Lungs → B Leomycin

→ Excise
Chest,
Bone Marrow

Radioactive



Two groups

ST Both sides of Diaphragm

ANY ST OR C B SYMPTOMS

KAPLAN MEDICAL

CLL → Smeared → NO/NA / Stain

32

NOT

ALL

Heart → Ad

Lungs → omycin → Ex

Ch

I - ONE 6

BONE

Both sides
of Diaphragm.

(KAPLAN) MEDICAL

TGC IS SYMPTOMS

CLL → SMEAR → NO (Ae) (Sweet H)
HD

L → Blasts

Heart → Adria
Lungs → B Leona

Stage

Ia ONE group
> 95% N
D

IIa Two groups

III Both sides
of Diaphragm.

KAPLAN MEDICAL

Stage C B S/M/T

CLL \rightarrow Smeat \rightarrow NO/NA (Sweet to HD)

Heart \rightarrow Adria
Lungs \rightarrow B Leon

Ia - ONE GROUP
 $>95\%$ N D

Two GROUP
Both side,
Diaphragm.

KAPLAN MEDICAL/
ANY \rightarrow \bar{c} B SYNT

CLL \rightarrow SMEAR \rightarrow NO IAC | Sto I HI 80-90%
HD

ALL \rightarrow Blasts

Heart \rightarrow Adria

Lungs \rightarrow B Leomycin

Stage

I - ONE GROUP
> 95%
N
D

II - Two groups

III Both sides
of Diaphragm.

IV

ANY STAGE C IS SYMPTOMS

KAPLAN MEDICAL

CLL \rightarrow Smeat \rightarrow Normal (StoT H 80-90%)
HD

ALL

Heart \rightarrow Adria

Lungs \rightarrow B Leomycin

I - ONE GROUP
 $> 95\%$ N
D

II - Two groups

th side,
aphragm.

KAPLAN MEDICAL
IS 3/11/18/5

CLL \rightarrow SMEAT \rightarrow NO (Aa)

Stret in 80-90%
HD

ALL \rightarrow Blasts

Heart \rightarrow Adria

Lungs \rightarrow B Leomycin

NOT w

\rightarrow Exc

Chest

Bone M

Stage
Radiate

I - ONE GROUP
Ia > 95%
IIa Two groups

HEMO

III Both sides
of Diaphragm.

IV
ANY STAGE c' B SPATIALS

KAPLAN MEDICAL

32 ♀ Neck Mass
Not well, Tender
Exc
Chest
ve ad

NHL
Stage III

Biopsy
IVIC CT



CLL \rightarrow Smeared \rightarrow NO/Ac (Stain)

ALL \rightarrow Blasts

Heart \rightarrow Adipose
Lungs \rightarrow B

Stage
Ia \rightarrow ONE group? $> 95\%$ N
IIa Two groups D

III Both sides
of Diaphragm

IV
KAPLAN MEDICAL
Stage C B's

Normal | Sweat in 80-90% | 32 ♀ Neck Mass | NHL
HD | Warm, red, Tender | Stage III
Heart → Adria | Asymptomatic | Biopsy | 80-90%
Lungs → Leon | CT, Abd, Relvic CT
ONE GROUP | >95% | Marrow
TWO GROUP | Both sides of Diaphragm
Stomach

Sweet HI 80-90%

HD

Adria

Leomycin

N
D

1
2
3
4
5
6
7
8
9
10
11
12

Symptoms

32 ♀ Neck Mass

Not warm, Tender

Excisional biopsy

chest
CT

NHL

Stage III or IV
80-90%

Cyber

1
2
3
4
5
6
7
8
9
10
11
12

♀ Neck Mass

NHL

Stage III & IV

80-90%



32 ♀ Neck Mass
Not firm, red, tender
Biopsy
Reluc CT
TOW

NHL

Stage III or IV
80-90%

Cyclophosphamide
H-Adriamycin
OP



Stage III 80-90%

HD

32 ♀ Neck Mass

NOT warm, red, tender

Excisional Biopsy

Chest, Abd, Pelvic CT

Marrow

NHL

Stage III or IV

80-90%

Cyclophosphamide

if-Adriamycin

O

P

CLL \rightarrow Smear \rightarrow NO/NA

Stool HT 80-90%
HD

32 ♀
NOT WARM

ALL \rightarrow Blasts

\rightarrow Adria

\rightarrow BL Leomycin

\rightarrow Excision
Chest, Ab
Mar

Stage
Radiate

I
D
Vinblastine

Chem

KAPLAN MEDICAL

8/11/04

QULSUZ

2010

20 9 Nachm.

...and the

3. Leaves

1. Chlorophyll

11. The two

11. *Phlox*

STRENGTH

CLL \Rightarrow Smeared \Rightarrow Normal Swollen 80-90% 32 ϕ Ne
HD

NOT warm,

\Rightarrow Blasts

Heart \Rightarrow Adria

Lungs \Rightarrow B Leomycin

\Rightarrow Excision

ONE GROUP
 $\geq 95\%$

Vinblastine
D

Chest, Abd

Bone Marrow

III Both side
of Diaphragm.

IV

ANY stage c' B' symptoms

KAPLAN MEDICAL

CLL → Smeat → NO/NA

StoT HI 80-90%

HD

32 ♀ N

NOT WAT

Heart → Adria

Lungs → B Leomycin

→ EXCISE

CHEST, AB

BONE MAR

I - ONE GROUP
→ 95%

Vinblastine
D

II - Two groups

III Both sides
of Diaphragm.

IV

StoT c' B' 3/4/10/15

KAPLAN MEDICAL

CLL \rightarrow Smear \rightarrow Normal (Survival 80-90%)
HD 32 ♀
NOT War

LL \rightarrow Blasts

flexT \rightarrow Adria

Lungs \rightarrow B Leomycin

\rightarrow Excise
Chest
Bone Marrow

Stage
Radiate

Ia - ONE GROUP
> 95%

Vinblastine
D

IIa Two groups

Chemo

both sides
of Diaphragm

IV

ANY STAGE C B 34/AT 14/5

KARLAN MEDICAL

CLL \rightarrow SMEAT \rightarrow NOIAA) Stout III 80-90%
AD

ALL

Heart \rightarrow Adria

Lungs \rightarrow B Leomycin

ONE GROUP
 $>95\%$

Vinblastine
D

Two groups

Both sides,
Diaphragm.

KAPLAN MEDICAL

ANY \rightarrow C IS SYMPTOMS

Heart → NO/Ax

Sweat in 80-90%
AD

32 ♀ Neck Mass

NOT warm, red, tender

Excisional Biopsy

Chest, Abd, Pelvic CT

Marrow

STS

Heart

I - DNE 60
Ia > 95%

II

STEP

US
VAP

CLL → Smeared → NO/NA (Sweet HI 80-90%) 32 ♀ Neck
AD

ALL → heart → Adria
Lungs → Leomycin → Excisional
ONE GROUP > 95% Vinblastine
D Chest, Abd, Re
Bone Marrow

Two groups

Both sides,
Diaphragm.

LFTS STP
CBC W/1
U&P

ARTS

KAPLAN MEDICAL

CLL - Smeared NO (A) Stout HU

LL \rightarrow Blasts

Heart \rightarrow Adria
Lungs \rightarrow B Leom

Stage

2nd stage

I - ONE group
> 95%

Vinblastine
D

II - Two groups

III Both sides of Diaphragm

IV KAPLAN MEDICAL
Any stage \rightarrow B symptoms

CLL → Smeat → NOIHA (Swot Hi 80-90%)
HD

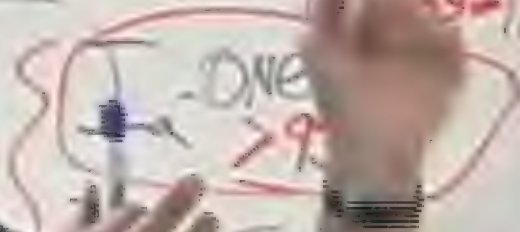
32 ♀
NOT WASH

Blasts

Fluor → Adria

→ Bleomycin

→ Excision
Chest, M
Bone Mar



Tu ...

side,
phasm.

IV

ANY STOC C' B' SPATWYS

KAPLAN MEDICAL

CLL \rightarrow Spleen \rightarrow Normal | Swollen 20-40% \rightarrow ♀ Nec
10

AL \rightarrow Heart \rightarrow Adria
Lungs \rightarrow Leomydin \rightarrow Excisional
I - DR 600P Vinorelbine Chest, Abd,
> 95% D bone marrow

II Two groups

orthostatic,
diaphoresis.

1% / year \rightarrow

KAPLAN MEDICAL

III
B's / A's / T's / S's

CLL \rightarrow Smear \rightarrow NO (A) Swollen 80-90%
HD

32 ♀ Neck M
NOT warm, red

Blasts

Heart \rightarrow Adria

Lungs \rightarrow B Leomycin

\rightarrow Excisional B

Ia - ONE GROUP
> 95%

vinblastine
D

Chest, Abd, Peri

Bone Marrow

Two groups

1% / year \rightarrow Leu

of Diaphragm.

TGC B's symptoms

KAPLAN MEDICAL

CLL \rightarrow Smeat \rightarrow NO/NA | Stool HI 80-90% HD 32 ♀

AL \rightarrow Heart \rightarrow Adria
Lungs \rightarrow B Leomycin \rightarrow Excision
Stage I - ONE GROUP Vinblastine Chest, A
>95% D Done Mar

1% / year

KAPLAN MEDICAL

5/11/10/45

CLL \rightarrow Smear \rightarrow Normal

Stout to 80-90% HD 32 ♀

Not wa

Heart \rightarrow Adria

Lungs \rightarrow Bleomycin

\rightarrow Excis

Chest

bone mo

1% /y

I ONE GROUP >95%

II

III both sides of diaphragm

IV

Any stage c B symptoms

KAPLAN MEDICAL

♀ Neck Mass

NHL

warm, red, tender

stage III or IV

occasional B symptoms

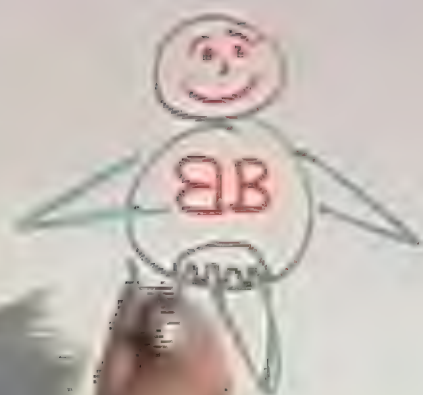
90%

st, abd, pelvic c

narrow

recloph

years → le
A



2 ♀ Neck Mass NHL

not warm, red, tender

excisional biopsy

hist, pth, review CT

Masses

1% / year \rightarrow $\frac{1}{A}$

NHL

III or IV

0%



♀ Neck Mass
 Not warm, red, tender
 Exocrine Bx
 CT, Pbc, Blue CT
 Mc Norton

Clo far → Leukemia
AR

NHL
Stage III/IV
20-40%

Cyclophosphamide
 H-Adriamycin
 O-Vincristine



32 ♀ Neck Mass
 Not warm Tender
 Excisional biopsy
 Chest, N
 Mass

NHL
 Rituximab

Stage III
 70%



has a nodule
 doxycycline
 O-VINCISTINE
 P



7
5/15
SP ✓

IIa

IIa Two groups

II Both sides
of Diaphragm.

IV

KAPLAN MEDICAL 13/3/15



40% 32 ♀

NOT W

EXC
Chest
bone M

1% 1/2

7
SP/US
✓

GROUP 1

do 1

asm.

1/2
KAPLAN MEDICAL



7
5/5
1P
✓

Group 1

side
pharynx

40% 32 ♀

NOT war

Excise
chest,
bone Ma

1% / ye

1/5/1

KAPLAN MEDICAL

Ia

IIa Two front

II Both
of Diag

IV

Any stage

7
5
SP

5
10

60
7

KAPLAN MEDICAL

NHL Rituximab
CD20

Stages III & IV

80-90%



Cyclophosphamide

H-Adriamycin

O-Vincristine

P

7
5
SP
Ia
IIa
III
IV

KAPLAN MEDICAL



KAPLAN MEDICAL



KAPLAN MEDICAL

22 ♀

220 ED
♀
SPASTIC/RETIC

22 ♀ ED
SPISTAXIS / Petechiae
PT: Normal (R)

22 ♀ ED

• SPIDAXIS / Potechiae

PT: Normal (12)

aPTT: ↑↑ 58 second,

PLATELETS:

220 ED

- SPASTICUS / Potchise

PT: Normal (R)

aPTT: ↑↑ 58 seconds

Platelets: 227,000

220 ED

SPSTAXIS/ReTechnise

PT: Normal (12)

aPTT: ↑↑ 58 seconds

Platelets: 227,000

History

Skin

Eyes

220 ED

Spontaneous/Retech

PT: Normal (12)

aPTT: ↑↑ 58 sec

Platelets: 227,000



Lab test history
SKIN
Epistaxis
Gingiva

220 ED
♀
Epistaxis/Petech
PT: Normal (12)
aPTT: ↑↑ 58 sec
Platelets: 227,0

A man with short dark hair, wearing a black t-shirt, is shown in profile from the waist up. He is pointing his right arm towards a large whiteboard that occupies the background. The whiteboard is mostly blank, with some faint, illegible markings. The man's expression is neutral as he points. The lighting is even, and the overall tone is professional.

KAPLAN MEDICAL

220 ED
♀
- SPASTIC/RETICULAR
: Normal (R)
TT: ↑↑ 58 second
PETS: 227,000

Platelet

Factor

220 ED

Ren

Joint

• Epistaxis / Petechiae

Epistaxis

Muscles

PT: Normal (R)

Angina

aPTT: ↑↑ 58 second

Platelets: 227,000

Lab test
Sign
Symptoms
- 1/1/1/1

220 ED
♀
Epistaxis / Petechiae

Pt: Normal (R)
aPTT: ↑↑ 58 second,
Platelets: 227,000

Male

1000
SMA
Muscles

220 ED

♀
Spistaxis/Potichiae

PT: Normal (R)

aPTT: ↑↑ 58 second

Platelets: 227,000



Plaque

LEOT

22 0' ED

22/11

SPINT

Spistaxis/Peto

Eyswice

Muscles

channel (12)

channel

↑↑ 58 sec

(P)

ETS: 227,00

20' ED

STAXIS/PTech

Normal (R)

↑↑ 58 sec

227,00

KAPLAN MEDICAL

♂ ED

axis / Petochno

1841 (12)

58 seconds

227,08

22 ♀ EPISTAXIS

17 = 12

17 = 12

Purple

1000

22 ♂ ED

1000

5000

Epistaxis / Petechiae

1000

10000

PT: Normal (12)

aPTT: ↑↑ 58 second

Platelets: 227,000

2.2 ♂ ED

SPASTAXIS / POTECH

PT: Normal (UR)

TI: ↑↑ 58 sec

ETS: 227,00

HECITY

VT: 12

QPT: 27

PLANKETS 2 000

2 ♀ SPASTAXIS

2 ♂ ED

axis / Retachae

transl
not

174

PT: 12

PTT: 27

Platelets 27,000

2 ♀ Spontaxis
Peterhew



Lab History
- N/A - Joint
Epistaxis Muscles
- Negative
 ↓
 GT
 GU
 CNS

22 ♂ ED

• Epistaxis/Petechiae

} Pt: Normal (R)

aPTT: ↑↑ 58 second

Platelets: 227,000



130/100
EKG
Chest
GT
GU
CNS

GI
Spleen
Muscles

22 ♂ ED

Spontaneous/Petechiae

PT: Normal (12)

aPTT: ↑↑ 58 seconds

Platelets: 227,000

2 ♀ epistaxis
petechiae
12
RTT 24
WBC 1700

ITP

12 ♀ SPURSTAXIS
Peteckiew
Healthy
PT: 12
aPTT: 24
Platelets 2

IT

KAPLAN MEDICAL

IT

2 ♀ SPIDTAXIS
Petechnier

Healthy

12

27,000

chuse

cond 1

000

KAPLAN MEDICAL

22 ♂ ED

SPISTAXIS

PT: Nor

TT: 1

ETS: 100

22 ♀ SPISTAXIS
Petechiae

Healthy

PT: 12

aPTT: 24

Platelets 27,000

22 ♂ ED

SPISTAXIS

PT: Nor

TT: 1

ETS: 100

22 ♀ SPISTAXIS
Petechiae

Healthy

PT: 12

aPTT: 24

Platelets 27,000

22 ♂ ED

SPISTAXIS

PT: Nor

TT: 1

ETS: 100

22 ♀ SPISTAXIS
Petechiae

Healthy

PT: 12

aPTT: 24

Platelets 27,000

22 ♂ ED

SPISTAXIS

PT: Normal

PT: ↑

PLATELETS: 27,000

22 ♀ SPISTAXIS
PETECHIAE

Healthy

PT: 12

aPTT: 24

PLATELETS 27,000

22 ♂ ED

SPASTICUS

Pr: Nor

TT: ↑

ETS: 2000

22 ♀ SPASTICUS
Tea 174
VPT 12
Te 174

app 24

Plaslets 27000

22.05.20

SPASTIC PARALYSIS

Pr: Normal

TS: ↑

ETS: ↑

22.05.20
SPASTIC PARALYSIS
P. 12.05.20

SPASTIC PARALYSIS
P. 12.05.20

2205 'ΕΛ

Σημειώσεις

Κτ:

Π: ↑

Κτ:

Π: ↑

Προβλεπόμενα
Προβλεπόμενα
Προβλεπόμενα

Προβλεπόμενα
Προβλεπόμενα
Προβλεπόμενα

ΚΛΑΙΝΕΔΙΟΝ